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PAPERS

RELATING TO

THE NICOBAR ISLANDS.

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PAPERS

RELATING TO

THE NICOBAR ISLANDS.

Nicobar Islands, with sailing directions from "Horsburgh's East Indian Directory, Vol. II. 1836."

Nicobar Islands.

THE Chain, or Archipelago, called Nicobars, and by the Malays Sambillangs, or Nine Islands, extend N. N. W. ¼ W. and S. S. E. ¼ E., about 53 leagues, having several safe channels among them: eight or nine of them are of considerable size, the others, nine or ten in number, generally small.

Geographical site of Car-Nicobar.

Car-Nicobar, the northernmost of these islands, bears from the S. E. point of the Little Andaman about S. by E., distant 80 miles, its centre being in lat. 9° 10′ N., long. 92° 54′ E. or 12° 32′ E. by chronometers from Madras. It is about six miles in length N. and S., and five in breadth, very little elevated above the sea, except at the W. side, and near the S. W. point there are small risings. The middle of the island is covered with long rich grass, where multitudes of hogs are bred; near the coast there are fruit trees of various kinds, particularly orange, citron, lemon, and lime trees; plantains, yams, and sweet potatoes may be also procured, but cocoanuts are in the greatest abundance, on which all the animals are fed, there being no sort of grain. Ships from the Coromandel Coast stop here at times to load with cocoanuts, which they receive in barter for coarse blue cloth, or other piece goods; and with the cargo procured here, they proceed to Rangoon, where they receive for it in exchange a cargo of planks for ship-building.

The inhabitants of this island are usually hospitable to strangers, and inoffensive to each other; they live in small villages near the sea, on different sides of the island, for the convenience of carrying their cocoanuts to ships. A ship having a scorbutic crew may touch here for

a supply of hogs, or other necessary refreshments, and she may anchor on either side the island in from 12 to 30 fathoms, near some of the villages; but soundings do not extend far out, the bank being steep, and the bottom mostly sand, or sand and coral, makes the anchorage indifferent. The most eligible place to anchor at is in a bay at the N. W. end of the Island in 10 or 12 fathoms, abreast the watering place and village. The *Minerva*, in January 1803, anchored in 8 fathoms, about half a mile off shore, with the village on the W. side of the island bearing E., and procured a few hogs. The same ship, returning from Bengal, anchored, 13th April 1803, in 11 fathoms, with the extremes of the island from N. E. by N. to S. W., and a village S. by E. one mile, where she remained three days, during calms and light airs, filling up her water.*

The *City of London*, 15th November 1800, anchored at 10 P. M. in 15 fathoms, and at day-light the extremes of the island bore from E. ½ N. to S. W. ½ S., the hill S. off shore about 2 miles. She filled up with good water, procured some fresh provisions, cocoanuts, limes, &c., for her scorbutic and sick people, and sailed on the 18th.

The *Ganges* anchored, 9th November 1805, in 15 fathoms, at the N. E. part of the island, bearing from W. to S. by E. ½ E., and a village S. W. ½ S., off shore 1½ mile; here she remained two days procuring about 15 butts of water, the wells being nearly dry and the surf rendering it difficult to get the casks from the shore; so the other side of the island seems preferable, when the season will permit a ship to anchor there.

The channel betwixt this island and the Little Andaman, generally called the Ten Degrees Channel, is spacious and clear from danger.

Batty Malve.

Batty Malve, in lat. 8° 46½′ N., bearing from the S. end of Car-Nicobar about S. by E. ¼ E., distant 7 leagues, is about 1½ mile in length E. and W., and half that in breadth. It is destitute of water or inhabitants, being composed of an entire rock, covered with a thin stratum of soil, which gives root to some shrubs and scraggy trees. At the W. end, it is of moderate height, sloping in the form of a wedge to the eastward, and has, therefore, been sometimes called the Quoin. At the S. W. end, about a mile distant, there are soundings from 25 to 35 fathoms, and 40 fathoms about ½ a mile off the W. end of the island.

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* Captain Hay, of the *Ly.* [illegible] who touched here for refreshments, 28th January 1813, advises not to round it from it; and that a large ship ought not to come under 12 or 14 [illegible] too close, as he got into broken water as he did, for the convenience of getting refreshments quick on board, having anchored abreast the village in 9½ fathoms 1 mile distant, the [illegible] point, N. E. ½ N., S. point, W. by S.; with 30 fathoms of cable out, a rock was seen under the ship, having only 7½ fathoms water on it. A ship ought to anchor about half way between the N. W. point and the village, in 12 or 14 fathoms sand, but never so near the village as did the *Inglis*.

Chowry.

Chowry, in lat. 8° 28½′ N., bearing S. 32° E. from Batty Malve, distant about 7 leagues, is of a square form, scarcely 1½ mile in extent. The S. E. angle consists of a large rock rising perpendicularly from the sea to a considerable height above the tops of the trees that grow on the island, which, excepting this rock, is low and level, and not elevated more than 6 or 8 feet above the surface of the sea.

Contiguous to the shore, cocoanut trees abound, and the whole of the level part of the island is a continued orchard of tropical fruit trees, oranges, citron, limes, &c. The natives rear also hogs and poultry, and, like those on Car-Nicobar, are generally friendly to such ships as stop at the island. Cocoanuts may also be procured here for the Pegu market. Soundings project out one or two miles from the shore; particularly off the S. W. end of the island a ship may anchor in 15 to 25 fathoms. On the N. E. side there is a village, with anchorage abreast, in 20 or 30 fathoms, sandy bottom.

Terressa.

Terressa, extending N. W. and S. E., between lat. 8° 12′ and 8° 22′ N., is about 4 leagues in length, and 5 miles broad at the N. W. end, but scarcely half so much at the S. E. end; the N. end bears from the nearest part of Chowry S. S. E. ½ E., distant 6 miles. Terressa, when viewed at a considerable distance, appears like two islands, the land towards each end, particularly the N. part, being much higher than in the middle. Its animal and vegetable productions are the same as on Car-Nicobar, but it is less populous. There is anchorage both on the E. and W. sides of the island; on the W. side, the depths are from 30 to 40 fathoms within ¼ or ½ mile of the shore; at the S. point, where a reef projects into the sea, it is not so steep, for a ship may anchor in 30 fathoms coarse sand, near the S. E. point of the island. This point I made in long. 93° 18′ E., or 12° 58′ E. from Madras by chronometers.

Geographical site.

Bompoka.

Bompoka, separated from the S. E. end of Terressa by a channel about 2 miles wide, is a small island, formed of a mountain partly covered with wood. Its summit is a sharp ridge, extending N. and S. about half the length of the island, from which the declivity on all sides is regular to the water's edge. This island is noted for its women being more fair and more handsome than any of the Nicobarians. In the channel betwixt it and Terressa there is said to be safe anchorage, particularly inside, in 15 or 20 fathoms under Bompoka.

Katchall.

Katchall, or Tillongchong, situated to the S. E. of the S. end of Terressa and Bompoka, and separated from them by a fine safe channel about 5½ leagues wide, is of triangular form, each side being about 3 leagues in extent. The N. and W. sides are moderately elevated, of level appearance, but towards the middle and S. E. part of the island, the land is higher,

and may be discerned about 8 leagues. It is covered with wood, and, along the N. W. side, there is anchorage in 15 to 25 fathoms coarse sand, from 1 to 2 miles off shore, but the N. E. side is steep, having no ground 100 fathoms about ½ a mile from it. The W. end of Katchall is in about lat. 7° 54′ N., long. 93° 27′ E., or 13° 7′ E. from Madras by chronometers, measured by me in 1798: and Captain C. C. M'Intosh made it 13° 6′ E. from Madras by chronometers in 1797.

Geographical site.

Ships may pass at discretion through any of the channels between Car-Nicobar and Katchall, being all safe. Steering in the *Anna*, for the Sombreiro channel in August, we were horsed to the northward by a current, and saw Katchall bearing E. S. E.; then bore away to the northward of it and Carmorta, and passed between the latter and Tillangchong through an excellent channel.

Nancowry Harbour, in lat. 8° 0′ N., long. 93° 41′ E., distant from the E. side of Katchall 4 or 5 miles, formed by a narrow channel that separates the Island Nancowry from the south part of the island Carmorta, is very capacious, and will shelter a large fleet of ships from all winds. Having an entrance at each end, one to the eastward, another to the westward, with soundings close to them, where ships may anchor occasionally, makes it very convenient; and they may enter or depart from it in every month of the year. The western entrance, about one-eighth of a mile, or 100 fathoms wide, is formed between two steep points of high-land, and the depths in it are generally from 27 to 35 fathoms; outside of it, a sandbank with irregular soundings from 6 to 12 fathoms, and patches of rocky bottom project a little way from the S. W. point of Carmorta. The eastern entrance is very little wider than the former, being contracted by rocky banks which line the shore on each side, having 12 and 14 fathoms close to them, and from 18 to 20 fathoms in mid-channel. Outside this narrow part of the entrance, there is less water in the outer part, betwixt the S. end of the island Trincuttee and the N. E. end of Nancowry, but in mid-channel never less than 6 fathoms, and generally 5 or 6 fathoms close to the rocky banks that bound it on each side.

Geographical site of Nancowry Harbour.

The tide runs strong with eddies through the western entrance in the springs, but it is safe with a steady fair wind, particularly when departing from the harbour. The eastern entrance is preferable for going in, being rather wider, with less water; and there is safe anchorage outside the narrow part, in the space betwixt Trincuttee and the E. side of Carmorta, which is called False Harbour, having various depths, from 6 to 10 fathoms, but it becomes very shoal to the northward.

The harbour is separated into two parts by two points of land facing each other, the easternmost, called Cross Harbour, from its form, is smallest, and contains several shelves of rock in the southern arm of it, with 5 or 6 fathoms close to them; here ships might be hove down

to their own guns, the water being perfectly smooth in all kinds of weather. The western or largest part of the harbour is a great basin of an oblong square form, about 2 miles long and 1 in breadth, with a cove on the west side, and another at the south end. In the N. W. part there is a rocky bank, with 5 and 6 fathoms water on it, but the depths throughout the harbour are generally 10 or 12 fathoms near the shore, and 18 or 20 fathoms in the middle, except near the western entrance there are from 27 to 34 fathoms. The bottom is all soft, good holding ground. The flood sets through the harbour to the eastward, but with very little velocity inside; high water at 9¼ hours on full and change of moon, and the tide rises 8 or 9 feet. Var. 1° 30′ E. in 1791.

Directions. Ships going in or out by either entrance, should endeavour to keep in mid-channel between the points, with people on the fore or fore-topsail yard, to look out for the edges of the rocky banks that line the shores.

A few Danish or Moravian Missionaries were settled here many years for the purpose of converting the natives to Christianity; the village at Cross Harbour, where they resided, was called by them Herman. Few refreshments are got here, the land being hilly and not cultivated; although on the north side of the harbour the soil is good and will admit of cultivation. Water is got in wells, although it is rather scarce in the dry season. The *Bellona* and *Isabella* went into the harbour in November 1795, and could only procure a small supply of water, a few hogs, and one or two bullocks, although the Danish Chief gave them his assistance. The natives will barter what refreshments they have for tobacco, in preference to cash, and shag from Java they are very fond of.

Nancowry Island. Nancowry, which gives name to the harbour, and bounds it on the S. side, is about 4 miles in extent, of triangular form, rugged and uneven, almost covered with wood. It abounds with lime-stone, is thinly inhabited, and little can be procured from it excepting timber and some hogs.

The harbour is considered unhealthy, by the noxious vapours arising from the impervious forests, and impregnating the surrounding atmosphere. The largest of the Nicobar Islands are, in general, from the same cause, liable to the same disadvantage; and the fever that prevails, called the Nicobar fever, or jungly fever of the continent, frequently proves fatal to Europeans who remain at these islands.

Camorta. Camorta, or Car-Morta, on the N. side of the harbour, is about 16 miles in length N. and S., extending to lat. 8° 15′ N., and from 2 to 5 miles broad. The N. end and middle of this island are flat, and not much elevated, but about the harbour it is high, particularly on the W. side, where stands the principal village, at the foot of a perpendicular ridge. There are said to be several sorts of poon trees fit for masts, which grow on the island; and there are several places of pasturage,

with a rich soil, producing yams, pine-apples, plaintains, guavas; sugar-canes are said to grow without cultivation, notwithstanding it is thinly inhabited. About 3 miles from the S. W. point, lies the mouth of a lagoon, which extends into the island a great way. Along the W. side there are soundings near the shore, and from the N. W. point projects a reef of rocks, with shoal water about 3 miles off.

Trincuttee.

Trincuttee, a low, level island, covered with betel-nut and cocoanut trees, about 2 leagues in length, near to and fronting the E. side of Carmorta, is separated from it by a narrow space; which, excepting the southern part, is shoal, and forms the first large opening in entering Nancowry Harbour from the eastward. There are soundings of 15 to 20 fathoms along the E. side of Trincuttee at a small distance, and good anchorage in 8 or 9 fathoms at the N. end, between it and the N. E. part of Carmorta.

Tillangchong.

Tillangchong, including the small islands adjoining to its S. end, extends from lat. 8° 22′ to 8° 33′ N., being 2 or 3 miles in breadth, and lies to the N. N. E. of Carmorta, 3 or 4 leagues distant. It is a high, oblong, rugged mountain that may be seen 12 leagues off, in many parts covered with trees, and inhabited only by such persons as have been banished from the other islands. The E. side of the island is steep, but close to the islets and rocks that line its western shore, and near those chained to its S. end, the depths are from 36 to 42 fathoms. Betwixt the latter and the N. end of Carmorta, the channel is 3 leagues wide and very safe, with a bank of soundings stretching from the islets off Tillangchong to the Islands Carmorta and Trincuttee, on which there are 42 and 45 fathoms near the former, from 40 to 65 fathoms in mid-channel, and 18 or 20 fathoms near to Carmorta.

Sombreiro Channel.

Sombreiro Channel, bounded on the N. side by the Islands Katchall and Nancowry, and by Meroe or Passage Island on the S. side, is very safe, and about 7 leagues wide. Meroe is a low small island about 3 leagues to the N. W. of the Little Nicobar, and bears from the S. E. point of Katchall S. 13° E., distant 7½ leagues, being situated in lat. 7° 29′ N., long. 93° 46′ E., or 13° 24′ E. from Madras by chronometers. About 3 leagues S. from the S. E. end of Katchall, there is a coral bank with various depths; the least water found on it has been 9 and 10 fathoms, but both to the northward and southward of it there is no ground in the channel.

Geographical site of Meroe.

With directions.

Her Majesty's Ship *Trident*, February 2nd, 1805, got one cast of soundings about 15 fathoms, coral and sand, in lat. 7° 42½′ N., long. 93° 33′ E. by chronometer, but the weather was too hazy to obtain bearings of the land.

Ships steering for the channel, if not certain of their latitude, should endeavour to fall in with the land on the windward side, accord-

ing to the prevailing monsoon; and they may pass through without hesitation by night as well as by day, if the weather is not too dark at the time.

About 4 miles E. by S. from Meroe, and nearly the same distance from the N. end of the Little Nicobar, there is a small island called Track, and another close to it on the E. side, called Trice, which are surrounded by rocks. Betwixt them and Meroe the passage is safe, said to have soundings from 12 to 20 fathoms; but the *Prince Regent* sailed through this passage, August 8th, 1820, at ½ past 5 A. M., and had no soundings with 33 fathoms line. Betwixt these small islands and the Nicobar, there is said to be a narrow and critical passage, with soundings from 7 to 12 fathoms, which should never be attempted.

The two large islands to the southward of the Sombreiro Channel are sometimes called the Great and Little Sambillangs, but generally Great and Little Nicobars; the former being the largest and southernmost of all the islands which form this chain.

Little Nicobar.

Little Nicobar extends nearly N. E. and S. W. from lat. 7°13′ to 7° 26′ N., being about 4 leagues in length, and half that breadth; it is moderately elevated and hilly, covered with wood, and steep to seaward; but there are soundings all round near the shore. On the N. W. side, a little to the westward of an island adjoining the shore, there is said to be an anchorage off a small bay, where there is a run of water; but although this island and the Great Nicobar are said to have many inhabitants, they are more imperfectly known than the other islands; the natives being shy of strangers, seldom or never venture on board of passing ships. They are, however, thought to be inoffensive, and have sometimes treated with lenity the people belonging to vessels that had the misfortune to be shipwrecked there.

St. George's Channel.

St. George's Channel, formed between the Great and Little Nicobar, is from 3 to 6 miles wide, and extending E. N. E. and W. S. W. about 5 or 6 leagues in length, with deep water in it, except near the western entrance. The bottom in general is foul, with strong tides or currents running in eddies through this channel; therefore, of late years, few ships have passed through it, unless accidentally carried into it by an unexpected current. A little inside the western entrance, the island Caudul is situated, nearest to the southern shore, and between them there is no safe passage. From the N. end of the same island a reef projects considerably, betwixt which and the northern shore is the proper channel, and ships that intend to proceed through should keep nearest to the N. side, or Little Nicobar shore, where there are said to be soundings, but none in mid-channel. The rocky bottom, deep water, and strong eddies will, however, always make it imprudent to anchor, except to the westward of Caudul Island, where the depths are moderate. On the S. side the eastern entrance, off the N.-E. end of Great Nicobar, is situated

Directions.

the small Island Cabra, of middling height; and on the N. side, the Island Monthoule, near the E. end of Little Nicobar. The entrance into the channel is between these two small islands.

Current.

The current sometimes sets strong to leeward for several days together through the various channels between the S. end of the Little Andaman and the southernmost Nicobars, according to the strength of the prevailing monsoon; but at times it slacks, or sets to windward, particularly when the winds are light and variable. Under lee of the different islands, there is frequently a kind of tides prevailing, when the current is setting strong to leeward through the channels between them.

Great Nicobar.

Great Nicobar extends N. by W. and S. by E., about 10 leagues in length, and 4 or 5 leagues broad at the N. part and middle of the island, where the land is high, and may be discerned 11 or 12 leagues off. The S. part becomes narrow, projecting out into a low level point about 1½ or 2 miles broad, covered with trees, and having a sandy beach facing the sea. This point is in lat. 6° 45′ N., long. 94° 0′ E., or 10° 34½′ W. from Pulo Aor by two chronometers exactly agreeing. By three chronometers agreeing to ½ a mile, I made it 21° 1′ E. from Bombay Castle, and Captain M'Intosh made it 21° 4′ E. from the same by good chronometers; the mean 21° 2½′ E. will place it in long. 93° 58′ E., allowing Bombay Castle in 72° 55½′ E.

Geographical site.

Captain P. Heywood, in 1804, made the S. point of the Great Nicobar in long. 93° 59′ E. by chronometers from Madras, allowing the latter to be in long. 80° 20′ E., and he made it in 94° 2′ E. by lunar observations.

The highest part of this island is in lat. 7° 8′ N., and mostly the whole of it is covered with trees. Soundings from 17 to 24 fathoms extend along the W. coast, about 2 and 3 miles off shore; from the S.-W. side, the bank projects about 2 leagues or more, the depths on it being from 25 to 30 fathoms about 5 or 6 miles from the shore. From the S. point a reef projects a considerable way into the sea, and lines the shore on the W. side, with soundings near it of moderate depths, over a bottom of coarse sands and shells; the S. E. side of the point is thought to be more steep, although it seems probable that soundings extend along the E. side of the island, near the shore, which part is generally avoided by ships.

Busch's Journal, kept on board the Schooner L'Espiégle, *on a Cruise amongst the Nicobar Islands, in* 1845,—*Captain H. Lewis in Command.*

CALCUTTA, *Thursday* 13*th March.*—Broke ground, having pilot on board, and dropped down the river.

Tuesday 18*th March.*—6-30 A. M.—Discharged the pilot, and took our departure from long. 88° 18′ E., lat. 21° 44′ N. Steered a direct course for Car-Nicobar, with a light N. and N. W. breeze, therm. 87°, bar. 30.

From 19*th March to* 30*th March.*—Light breezes and calms, with fine weather; therm. from 86° to 92°: crew employed in arranging the armament of the vessel.

Monday, 31*st March.*—Made the N. W. point of Car-Nicobar during the night, and stood off and on till daybreak, when we anchored in the N. W. bay in 7½ fathoms, sand. The village of "Sowrah" bore S. W. by S., and the extremes of the Island N. E. ¾ E., and W. by S. ½ S. Went on shore at ½ past 10; and found the people quiet and inoffensive. The men are stout, though not very muscular, and exceedingly ugly—partaking somewhat of the Burmese physiognomy and complexion, only far less pleasing. Our medium of communication was a mixture of English and Portuguese, with a few signs. The construction of their huts and boats displays great ingenuity. Their houses are circular, erected on the beach, surrounded with cocoanut trees and dense jungle, being substantially built on solid posts driven into the ground, and elevated 8 feet: the floor is a strong frame-work of timber and rafters (the common poon of Malacca); and the roof is formed exactly like a bee-hive, of fine bamboos and strong rattans, being from 30 to 50 feet diameter, and of very considerable height; the entrance is from below, through a trap-door by a ladder. These habitations are cool, dark, and smoky, and not ill-adapted for the climate. Many have a ceiling of wood, handsomely ornamented and carved, and answering the purpose of a store-room. Apparently these huts serve several families for a residence. We counted as many as 37 individuals in one, and though there may have been visitors amongst them, yet the number is large. They abhor the idea of being counted, thinking it some spell to do them harm. We could not perceive much sickness amongst them, though they ask for medicines, and obtain them from most vessels: like children, they wish to have everything they see, and make no use of what is given to them. They are fond of drinking and feasting. Cocoanuts, betel-nuts, pigs, poultry, and yams are the staples of the island. Numerous vessels, English, Burmese, and native craft from Coromandel, visit them; and it is calculated that more than 25 cargoes, of not less than 100,000 nuts each, leave the island every year. The barter is—1, various kinds of cloth; 2, straight cutlasses (which the natives use most dexterously for the purpose of ascending the cocoanut trees, and opening the fruit); 3, hatchets; 4, silver spoons; 5, Spanish

Dollars and Rupees; 6, ardent spirits; 7, common fowling-pieces; 8, sundry articles of Burmese manufacture, as long knives and colored cloth; 9, Chinese tobacco, and American Negro-head, the strongest being most approved of.

Betel-nut is abundant, and is apparently cultivated, but the inhabitants are too idle to husk, and little is therefore exported. In their dress the Car-Nicobarians do not go to much expense: a rag of blue nankeen, four feet long and three inches broad, serves to conceal and firmly tie up the *propria maribus;* and the women are content with a piece of white or blue cloth wrapped round the loins. A black hat or red woollen cap are ornaments which the men covet, though they never use them at home: silver soup-ladles are used as ornaments at festivities. Both men and women consume large quantities of tobacco and betel-nut: the former is made up in the form of Spanish cigars; and as a cigar-case they use a hollow bamboo inserted in the flap of the ear, in the manner of the Burmese. Betel-nut, mixed with pawn-leaf and quick-lime, is used by both sexes to a frightful extent, rendering their countenances most hideous by disfiguring and blackening the mouth and injuring the teeth. This excess can hardly fail to injure their health, and perhaps it may be one cause of their generally not arriving at any advanced age, nor being very prolific; 40 or 50 years seems to be the greatest age attained by the men, and we certainly saw no instance of longevity beyond that; of children we observed but few. Their boats, like their houses, show considerable ingenuity, and in the management of them they display great skill. These boats have outriggers; the larger carry from three to four masts, with mat sails, and are capable of holding from 20 to 30 men; in these they cross over to the southern islands, and barter cloth for canoes, cooking-pots, and rattans. Their weapons consist of spears of various sizes; but only intended for killing wild pigs and fish; they have no nets.

We found drinkable water a short distance from the shore, in a well 10 or 12 feet deep, dug in a soil consisting of *débris* of coral and shells, which was evidently once the bottom of the sea. We shot a few parrots and other birds, but seldom could succeed in getting them, on account of the impenetrable jungle. Passed a couple of hours in the huts, and returned on board.

Tuesday, 1*st April.*—All hands employed watering. We were visited by some boats from *Moose* village, situated to the south. The people in them seemed less cunning and knowing than their neighbours, and were more easy to bargain with; they brought the usual cocoanuts, yams, and bad plantains. Fish we could not obtain, for they never sell it; we caught, however, a rock cod, but it was not eatable. Went on shore again, and tried to penetrate into the interior, to an open elevated plain which we had seen from the sea. We enticed two natives to accompany us, but they were excessively unwilling to proceed, and one left, after having accompanied us about a mile, through low ground covered with high grass. At last we reached the rising ground, and proceeded another mile, but saw nothing around us but jungle, betel-nut trees, and a species of low palm, bearing a large red fruit, which, when mixed with yam, hog's lard and cocoanut, and baked, forms a substitute

for bread. Our guide being unwilling to proceed further, we did not think it prudent to persist, and returned to the village. It would appear that the Nicobarians have establishments inland, which they do not wish Europeans to visit. The soil on these plains is undoubtedly fertile; but a settlement there, nay, even an exploring party, would doubtless meet with much opposition. There is a rich field for the naturalist.

As we were not prepared to barter for cocoanuts, the natives did not seem to care much for us or for our goods; and we experienced some difficulty in obtaining even a few provisions in the shape of fowls and pigs. The Nicobarians have the character, amongst the English "skippers" and other traders, of great honesty and promptitude in their transactions. A principal man of the village contracts for a certain quantity of nuts, to be delivered on a certain day at a certain place; the goods given in barter being handed to him in advance, he divides them amongst the villagers, and they seldom fail to perform their part of the contract; to this effect they hold numerous certificates from different Captains. They are very fond of high-sounding names—as Lord Byron, Lord Nelson, Anson, &c.; they also frequently adopt the names of Captains who have had dealings with them, and treated them kindly; one we found named "*Young Crisp.*" A snake had been killed during the night, but it was so mutilated and putrid that there was no possibility of preserving it; it measured 13½ feet in length, and appeared to be a boa constrictor. We learnt that they were numerous; and likewise obtained a smaller snake, said to be poisonous, which we preserved in spirits.

Wednesday, 2nd April.—Again employed in watering and surveying. Had visits from several natives, all of whom knew a few words of English and Portuguese; they were willing to receive presents of all kinds, and not backward in asking; but to barter they were averse, except for cocoanuts, which we could not take. We obtained a few fowls, pigs, and yams, all of good flavour, particularly the latter, in exchange for a German silver soup-ladle and some old cutlasses. There was a severe squall at noon. We forwarded letters by a Burmese junk to Mergui.

Thursday, 3rd April.—At day-break got under weigh, with light airs and calm, and sweeped out: stood N. E. in order to round the reef extending from the N. point. We spoke a *Cheulia* brig in ballast from Penang to Arracan: and sent duplicates of our letters by her. At 4-15 P. M. the wind shifted to N. E., with a heavy squall. Stood away for the N. E. anchorage, and at 6. P. M. brought up between the villages of Moose and Lapata, in 10½ fathoms; shore distance ½ mile. In the evening we pulled on board of the Barque *Swallow*, which had put in for water from Moulmein bound to Mauritius.

Friday, 4th April.—Landed at Lapata village, where we got provisions in abundance, and found a large junk at anchor, commanded by a Portuguese from Mergui, Signor de Castro. From him we obtained some correct information regarding the French Missionaries on Terressa Island; he had stores for them on board. He also gave us an account of the massacre that was perpetrated by the inhabitants of that island on the crew of the Schooner *Mary*, Capt. Ignacio Ventura, from Rangoon,

which occurred in August last. The village of Lapata and its *dependence* is the largest on the island; but the anchorage is not good, and no water is to be had. The inhabitants keep a register of vessels that touch at the island. To the Port Captain of Lapata, by name Atlas, we entrusted the Danish ensign to keep till our return.

Saturday, 5th April.—We went on shore early, and made an excursion to an inland village, where we saw nothing worthy of notice, the jungle being very dense, and the houses not so large and substantial as those on the coast. A rather respectable-looking native, enjoying the soubriquet of "Neptune," was our guide. We witnessed a marriage feast: and obtained a specimen of tortoise-shell, but not very good, one shell containing 18 pieces, small and large, which weighed only 1½ drs.

At 2 P. M. we again got under weigh, and worked round the S. E. point: at 8 P. M. S. W. point bore W.: *night dark and cloudy*: bar. 29·95; ther. 89°. The main object of the expedition being to explore the southern group or Sambillang Islands, and the season being already so far advanced that the monsoon might shortly be expected to set in with all its force and put an end to operations, we did not deem it advisable to devote more time to this island, which is often visited, and therefore comparatively well known.

Sunday, 6th April.—Cloudy squally weather, with strong winds: at day-light sighted Batty Malve, a rocky uninhabited island, bearing E. by S. ½ S., and distant 10 miles. A water-spout close to us, but avoided. Heavy rain: long. by chronometer at 9-30 A. M. 92° 56′ 15″ E.; lat. 8° 47′ N.; bar. 29·83; therm 89°. No anchoring ground near Batty Malve.

Monday, 7th April.—At daylight calm; found ourselves within 2 miles of Batty Malve, with a strong set to the eastward. Out sweeps, and made an offing, when a light breeze sprung up, and we sighted Terressa on with Chowry: at 10 P. M. again calm, obliged to sweep, in order to avoid the easterly current, which is very strong amongst the islands at this season, and rather dangerous: at 11-30 P. M. with a light breeze we stood S. E. for Terressa. Chowry is remarkable for its shape, there being a high abrupt rock on the S. E. point, and the remainder low flat land, well inhabited, but producing no cocoanut trees.

Tuesday, 8th April.—At daylight we made the S. W. side of Terressa, and ran in close, in order to sight the village of Lakshee, where we expected to find and communicate with the French Missionaries: stood N. E. along shore, saw no village, but admired the appearance of the island, which to the N. E. consists of moderate hills, being in many places free from jungle, and exhibiting lovely plains and valleys: at 2 P. M. tacked and stood to the southward: the wind falling light, and the night lowering, we anchored in 20 fathoms, about ¾ mile off shore. Night gloomy, and the wind blowing hard in gusts. Kept a strict anchor watch, in order to be on our guard against any attack on the part of the natives: a small boat came alongside, but the natives would not come on board, and we could obtain no information whatever from them.

Wednesday, 9th April.—At daylight weighed and made sail, with the wind blowing dead on shore; stood away S. W.: the wind falling light, the strong set to the eastward carried us close into the tremendous breakers; we already felt the first roller, being barely two lengths from the rocks, which we cleared with the greatest difficulty by all hands plying the sweeps. At. 8-30 A. M. we found ourselves abreast of Lakshee, and saw the French Missionaries amongst the spectators on shore; we hoisted Danish colors, and stood away S. W.; at 10 o'clock, a large canoe with 12 or 15 men came out, from whom we got a pilot, name "Philip." Mr. Busch went on shore in the canoe, in order to see the Missionaries, and rejoin the vessel when at anchor. The passage through the breakers was terrific but safe. After rounding the S. W. point and an extensive reef, we stood for the passage between Terressa and *Bompoka,* course N. E. and N.—When within less than half a mile of the anchorage, the wind failed us, and the tide turning at the same time, carried us back again to sea at the rate of five knots an hour, against sweeps and light airs. The overfalls were very heavy, and we shipped several seas, one of which carried away the jolly boat, and we very nearly lost the vessel.—At 11 P. M. the tide turned again, and brought up a squall from S. E., which carried us through the passage at the rate of nine knots. At 6 P. M. we came to an anchor in 35 fathoms, sand and coral, ½ mile off shore. There is no danger in this passage, with a good leading breeze; but the entrance into the bay from the N. E. side is broad and clear. The bay of Terressa is well protected against the N. E. and S. W. monsoon, but is exposed to an easterly gale; the rise and fall of tide at new and full moon is about 10 or 12 ft.

Thursday, 10th April.—We landed, crossed the island, and had some communication with the inhabitants. The distance across was 2½ to 3 miles: the landing is rendered difficult by a number of coral rocks which are covered at high water; but there is no surf. From the beach we ascended through a dense jungle of trees, creepers, and brushwood swarming with pigeons and parrots, and extending for more than half a mile—then followed more rising ground, comparatively clear, and covered with high rank grass; and finally, a high undulating plain, open and clear, which afforded a fine view over the sea, on both sides of the island. This plain extended about ¾ mile E. and W. We again descended to the low beach, which we reached after crossing a tract of dense and filthy jungle, enclosing the village of Lakshee, which is rather a large one and well built. We found the Missionaries, Messrs. Chabord and Plaisant, men of education and not bigoted. Sincere they must be in their wish to Christianize the natives, and we cannot but admire the charity which induces them to forego the comforts of civilized life, in the hope of making converts. M. Chabord has resided three years on the island, but his efforts have unfortunately been attended with but few good effects. They landed first on Car-Nicobar, but the Nicobarians being averse to European residents, they were by Capt. Crisp removed to Terressa; one of the company here died of fever, and no wonder when the locality of their residence is considered. They live in a native house, which is roomy enough, but thickly surrounded with jungle, barring all admission of air. They brought with them materials to build a house, carpenters

to erect it, and even a gardener: but the natives opposed all innovations; and forced them to abandon their schemes of improvement, keeping them almost as prisoners, shut up in a house in the centre of a dirty village.

We explained to them the object of our expedition, and they hailed the idea of a settlement being made on the islands as a means of extending their chances of improving and converting the natives. M. Chabord honestly owned that they had not yet made any *bonâ fide* converts, yet we would hope that their efforts have had some civilizing tendency. On questioning the Missionaries regarding the attacks that had lately been committed on ships visiting the islands, they gave us willingly all the information they possessed, of which the following is the substance: as their authority they gave the natives themselves, who could have no motive in misrepresenting their own countrymen to their disadvantage.

1*st*.—The Whaling Vessel *Pilot* was, in 1839, attacked in that part of Nancowry Harbour usually called "False Harbour," being between the north side of Carmorta and Trincuttee. It is asserted, and with much probability, that provocation had been given, and all discipline abandoned. The crew attempted to interfere with the women of the islanders, when more than half of them, with the Captain and some officers, were attacked and slaughtered on shore; many canoes were at the same time alongside the vessel, and nearly completed the work of destruction there. One boat, however, with five men and a mate, escaped with great difficulty, and made for the mainland; but falling in with a man-of-war conveying Sir Hugh Gough to China, they obtained assistance to recover the vessel, which was eventually brought to Singapore in a sad state. The crew consisted originally of more than 40 men, of whom only five escaped; the fight is said to have been desperate—several natives were wounded and bear their scars to this day. H. M. S. *Wanderer* was, in 1840, dispatched to avenge this affair; she burned a few huts, fired some shots, and punished the innocent with the guilty. This mode of revenge they do not care for: the only punishment to affect them would be the destruction of their cocoanut trees.

2*nd*.—In 1833, a *Chulia* craft of two masts, commanded by a Eurasian, with a lascar crew, and coming from Bengal, was cut off in the same spot. The Captain was murdered on board, and the whole crew assassinated there and on shore while watering: the vessel was then plundered and sunk. No notice seems to have been taken of this affair.

3*rd*.—August, 1844: Capt. Ignacio Ventura, commanding the Schooner *Mary*, 150 tons, belonging to Rangoon, was attacked at Terressa whilst at anchor on the northern side of the harbour, under the villages of Lallong and Bengallah. No provocation was given: there was no European crew on board, and but a very small native one. The Captain was killed on the quarter-deck whilst bargaining with the natives, whereupon the crew leapt overboard and were drowned or

murdered, the vessel was plundered, and then set fire to and turned adrift. The ring-leaders are well known as bad characters, and were most probably instigated by example or encouragement from Nancowry. Three weeks previous to our arrival, the H. E. I. C. War Steamer *Phlegethon* called and anchored in the harbour for several days, making enquiries, partly through the French Missionaries, one of whom, suffering much from ill health, went as passenger in her to Penang or Mergui. The people of Nancowry, even amongst their own countrymen, bear a bad character. Purely native craft, however, have never been known to be attacked, probably because the temptation is not sufficient.

4*th*.—1844: Capt. Caw, commanding a vessel of 100 tons, belonging to himself, called at Carmorta, was attacked and killed without provocation, and the crew, panic-struck, leapt overboard: an Arab serang had alone presence of mind to run into the cabin; he there seized fire-arms, and shot one or two of the assailants, who in their turn took fright and left the vessel,—after which the serang and crew brought the vessel to Penang, carrying with them the Captain's corpse preserved in arrack. In Penang the serang was arrested on suspicion of having murdered the Captain, but was acquitted on a strict enquiry. A vessel of war has been since sent to enquire into particulars, but nothing further appears to have been elicited.

We passed the day with the Missionaries, and returned to the vessel at sunset, inviting them to visit us on the morrow, and leaving Mr. Lowert to accompany them.

As might be expected, the population of this village, probably increased from the adjacent ones, flocked in numbers to see "Signor Padre's" visitors: the total number, however, was small, perhaps 150; as before mentioned, the islanders dread being counted. The Missionaries having visited every village on the island, estimated the number of inhabitants at 700: probably this estimate may approach the truth, and certainly there are not above 1,000 souls on the whole island. As to their morals and religion, our friends the Missionaries gave them but an indifferent character: but in intellect they are not behind the Car-Nicobarians, though they have not the advantage of frequent intercourse with Europeans. A rather respectable headman of the village of Lakshee, who gloried in the name of "Gold-mohur," showed us a very handsome baton, silver-mounted, bearing the chiffer and crown of His late Majesty Frederick VI of Denmark; he also admitted having in his possession the Danish ensign, but he was afterwards either unwilling or unable to produce it. Their accounts were so confused that we could not understand whether Mr. Rosen, whose name was known, had left it here, or whether they had obtained it by barter from Carmorta. Their houses and boats are well constructed, and even ornamented with some taste; they pay much attention to their cocoanut trees, but to nothing else. Yams and wild mangosteens are abundant: sugar-cane of a very superior description is also found; but we did not see it growing. The cane which was brought to us appeared half cultivated, half wild, was full of saccharine matter,

but had a strong woody fibre. We observed several species of forest timber of large size, and of these we brought away specimens; they mostly resembled the Penang woods, but we could detect nothing like teak. On our return to the vessel, we crossed two rivulets, one rather considerable, though the rains had not commenced. The jungle abounds with wild pigs, which afford the islanders both sport and provisions. Of birds we saw a great variety, but it was difficult to get near them. The soil near the sea shore, on both sides of the island, consists of sand, coral, lime, and vegetable mould, admirably adapted for cocoanut trees. The high-land throughout the centre of the island is red clay, with limestone, and is covered with a rich vegetable mould; it appears admirably adapted for the growth of sugar-cane, particularly as the climate is said to be moist, hot, and not very tempestuous, and the advantage of a sea breeze could not fail to insure a good cane. In reference to climate, however, the information we obtained from the Missionaries was not much to be depended upon; for they seem to have paid no attention whatever to the weather, nor even to have registered the temperature from the thermometer they possess. The land being rather low, there is nothing to arrest the clouds, so that the rains cannot be very heavy. The heat on the high-land is reported to be moderate. It seldom rains during the months of December, January, February, and March, which are dry and hot. The S. W. monsoon is the season for catching turtle: they then come on shore to deposit their eggs, and are caught in traps. The shell is of fair quality, but not equal to that of Borneo and the Sooloo Archipelago. We bought some fine shell for a hat.

Friday, 11*th April*.—Went on shore at daylight, and roamed through the forest and high-land. A heavy dew had fallen during the night, the effects of which we felt severely. To colonize the island, an importation of Chinese laborers would be requisite, and also people from the Coromandel Coast. The facilities for cultivation would be little inferior to those at Penang, and with a sufficiency of labor they would ultimately prove greater. The natives would no doubt dislike a settlement of Europeans; but they are too few, too timid, and not united enough, to attempt anything against a tolerably well regulated settlement. It is to be regretted that we did not visit the Island of Chowry, for, according to M. Chabord's account, it is the most cultivated and populous, and the people are also the most civilized, of this group; cocoanut trees are, however, very scarce, and the inhabitants are therefore obliged to resort to Terressa, and by working for their wealthier neighbours obtain a livelihood: if colonisation were attempted, it is more than probable that the services of these men might be secured for the colony. In settling on this island, it would be absolutely requisite to be provided with presses for extracting the oil from the cocoanut, for by purchasing most of their nuts, the inhabitants would be rendered dependent on the settlement.

Messrs. Chabord and Plaisant came on board to breakfast; and we passed the day pleasantly, obtaining all the information we could: many natives visited them on board. M. Chabord has compiled a manuscript dictionary of the language, which he appears to speak correctly; at least

he is well understood. M. Plaisant had not been here quite a year, yet he also has made great progress in the language, notwithstanding the repeated attacks of fever which have much reduced him.

Bompoka or Bambocka is a small island S. E. of Terressa, distant 2 miles, forming the S. side of the bay: the anchorage is good, and landing easy. The land rises abruptly from the beach to about the height of 750 feet: it has abundance of good water, and of fine timber, and it is well sheltered: there is but one village facing the bay, which took fire whilst we were at anchor there, and several houses were destroyed. M. Chabord having on his last visit to the Island of Katchall left part of his property there, it was agreed that he should accompany us there *viâ* Nancowry, where he has also formed acquaintances. The survey of the island, but more particularly of the bay, having been finished by Capt. Lewis, the following day was fixed upon for our departure: in the evening the Missionaries went on shore to make their arrangements.

Saturday, 12*th April*.—M. Plaisant came on board, and reported his reverend brother too ill to undertake the cruise, but said that he would himself take M. Chabord's place. At 7 A. M. we got under weigh, and with a westerly breeze sailed all round the bay to the northward, standing close along the shore, having 8 to 12 fathoms water, and quite smooth. We saw a number of houses and boats, but not a single inhabitant; no doubt an evil conscience, or rather fear of retribution, made the inhabitants shy. We then crossed the bay, sailing round the east side of Bompoka, and stood away to the eastward for Carmorta: at 2 P. M., having rounded the N. point of Carmorta, we stood close in shore, admiring some of the finest scenery we had yet witnessed. On entering the bay formed between Carmorta and the N. side of Trincuttee, we observed a large junk, which immediately got under weigh and stood out to the eastward, at the same time we saw a number (at least six) of very large canoes full of men, pulling away for the shore, not one attempting to come near us. We immediately gave chase to the junk, and suspecting all was not right, we brought her to, by firing a shot across her bows, and then run alongside and enquired the Master's reason for running away: from what we could understand of his answer, it appeared that he belonged to Mergui, and had completed his cargo, consisting of cocoanuts and betelnuts; his vessel was about 200 tons. The currents being very strong and uncertain amongst these islands, the anchorage doubtful, and the wind light and night approaching, the Captain did not think it advisable to touch here, but proceeded round Trincuttee to the entrance of Nancowry Harbour; and at 7 P. M. we anchored in the passage between Nancowry and Trincuttee, which forms the outer harbour.

Sunday, 13*th April*.—At daybreak weighed and stood into the inner harbour with a light breeze; we were obliged to use the sweeps, and anchored in the centre of the harbour, having both entrances open, and opposite to the village of Malacca. Several natives dressed in jackets, hats and trowsers, came on board, and some of them showed us badges of authority similar to those we saw at Terressa, as also several certificates from Mr. Rosen, in English and Danish, appointing them head-

men of different villages. They admitted having had flags, but stated that these had been removed by a Captain Hazlewood, some years ago. A country-born lad of about 17 or 18 years of age, by name William Goldsmith, came on board: he was decently dressed and well behaved; had good certificates from many captains, but particularly from the commander of the H. E. I. C. Steamer *Phlegethon*: he stated having, about six years ago, left an English vessel commanded by Capt. Spottiswood, and, together with the mate, Mr. Robson, remained on the island; he had been well treated by the natives, and felt no inclination to return to his native country (Madras), where he had no relations living. He looked very sickly, and occasionally appeared weak-minded or imbecile. The natives of Nancowry Harbour were shy, and did not leave a favorable impression: they have much intercourse with the Malays and Burmese. The steamer had visited them about a month ago, various subjects having been then enquired into, and she was expected back again shortly. The lad Goldsmith, when questioned as to the attacks upon vessels, protested that his friends were innocent, and referred it all to the inhabitants of the northern harbour, with whom they keep no intercourse whatever. We found Malays here, preparing tripang, alias *Biche de mer*, for the China market. There are different kinds of tripang, white, red, and black, all in great abundance; they resemble gigantic leeches: the black are said to be of least value; they are boiled, dried in the sun, and packed with lime; but we could not obtain a sight of them in the prepared state. The natives brought us turtle-shells, adulterated ambergris, and dammer of very superior quality. Our intercourse with these people was cramped by fear of treachery, against which we were obliged to take every precaution, on account of the smallness of our force. The headman at Malacca, by name Angri, came on board in full dress; he looked well, and spoke Portuguese tolerably; showed a certificate from Rosen, given to his father; and with him came a negro-looking man of a most forbidding and suspicious cast of countenance.

Monday, 14th April.—Employed in surveying the harbour. Went on shore to see the ruins of the Danish settlement, which we found on the island of Carmorta, opposite Malacca village, on the N. side of the harbour, on a rising ground half up the hill. The walls of a few miserable brick-built houses were all that remained: not a vestige of plantation or of cultivation, though the hills and valleys all round are entirely free from jungle. There does not appear to be any fault in the soil, though probably the situation is not sheltered enough for coffee and nutmeg. The natives told us that the colonists paid most attention to the growing of rice; but this seems preposterous, when we remember with what facility it can be imported. A brick-built house seems also to be ill-calculated for the climate; wooden houses, as in Burmah, are raised with ease, and answer much better. We regretted much that we could never obtain any clear account of the settlement, nor of the misfortunes and obstacles it must have met with: the islanders spoke with affection of the settlers, and also of the Government. The scenery is pleasing: but the harbour is landlocked, and not so cheerful and open as that of Terressa. It is said that there are wild cattle on the island, but we never saw any. In the absence of a correct report regarding the last settlement in these islands, it is almost useless to speculate

on the probable causes of its failure; but it would appear to have been undertaken by men with little practical knowledge of colonization, who had themselves no interest at stake, and unprovided with means adequate to the task. In an attempt of this kind, all depends on the first settlers: they have everything to face, and should be well provided for accordingly; well lodged, well fed and attended, and their wants should, as far as possible, be anticipated: whereas these had to depend upon a tardy communication with the parent colony. A lakh of rupees, properly disbursed at first, would avail more than five lakhs in as many years. The natives brought us some excellent sugar-cane, which they cultivate for their own use. It appears there is some intercourse between this island and the Great Nicobar. Here also the Malays carry on much trade, and have probably instigated to some of the massacres. On leaving this harbour, we found that some of our visitors from Nancowry had managed to steal the brass rowlocks of our cutter.

Tuesday, 15*th April*.—Weighed and worked out through the S. W. entrance of the harbour, where the wind failed us in the narrowest part, and the current setting strong on to the rocks, we were obliged again to have recourse to the sweeps, to which alone we were indebted for the safety of the vessel. Having at last gained an offing, we stood N., with light winds, and anchored at 8 P. M., in 12 fathoms water, off the N. W. side of Katchall: saw a brig working to the southward, distance about six miles W. Therm. 87.°

Wednesday, 16*th April*.—At daylight weighed and worked to the southward, with light variable winds, against a strong S. W. current: saw the brig to the eastward of us, having drifted about 10 miles whilst we remained at anchor. At night again at anchor off Katchall, ¼ mile from the shore, bottom sandy. This island is of considerable extent, and covered with forest and jungle. The human inhabitants are very few, but the island swarms with monkeys who destroy the cocoanuts. Mynahs, tortoise-shell, and ambergris are procured here.

Thursday, 17*th April*.—Weighed again, calms and light winds: a boat from Katchall came alongside, bringing fruit and birds. M. Plaisant went on shore in her. We saw a large vessel coming up with a southerly breeze; made sail to meet her, and went on board: she proved to be the *Cecilia*, Capt. Norris, from the Isle of France to Moulmein, in ballast, intending to pick up a cargo of nuts at the Nicobars. Forwarded letters and journal by this opportunity. We afterwards spoke the brig, which proved to be a Dutch vessel, deep laden with rice, from Arracan to Padang. Made sail again to the southward.

Friday, 18*th April*.—Light variable winds with calms, and a strong current against us. Long., by bearing, S., 93° 13′ E., by chron. 93° 14′ 45″ E. Bar. 29·90. Therm. 89°.

Saturday, 19*th April*.—Calms: drifted about with the current, and attempted to land. Therm. 115° and not a breath of air.

Sunday, 20*th April*.—Light westerly breezes, with fine weather. At 9 A. M., abreast of Meroe Island: carried soundings all along to the Little Nicobar, from 8 to 35 fathoms, sand. Passed a singular shoal of

sharks and bonitoes of remarkable beauty. Came in with the land a little N. of St. George's Channel, and stood to the N. W., with a leading wind; at 4 P. M. anchored to the westward of the island that forms one side of the N. W. bay, in 15 fathoms sand and shells, the current running N. E. and S. W., at four knots an hour. Went on shore, where we met some natives who spoke Malay, and were informed by them that the other or N. W. side of the island afforded far better and safer anchorage.

Monday, 21st *April*.—A few of the natives visited us, bringing fowls and fruit, two of them remaining with us the whole day. At 2 P. M. weighed, and ran into the N. W. harbour, which is quite safe and is protected from all points but the N. W.

The Little Nicobar is entirely covered with jungle, and presents only a succession of hills and valleys, the former of which rise to about the height of 1,000 or 1,200 feet above the level of the sea. The population appears to be very scanty; and, unlike the other islanders, these have no villages, but build only two or three huts together on the beach, where alone are grown the betelnut and cocoanut trees. We showed the natives some English coal, and promised a reward if they brought us some like it, to which they readily agreed, adding afterwards that they would bring it from the opposite island. Landed in search of water, and found a stream close to the shore on the main island.

Tuesday, 22*nd April*.—Employed in watering. The timber that covers the island seems but of little value. Towards evening, the natives brought us coal in considerable quantity found on Trice Island at low water: it resembles lignite, or half-charred wood; is very heavy compared with coal, burns freely, emits a strong sulphurous vapour, and leaves a whitish-brown ash. We gave those who brought it $5 in cash and tobacco, with handkerchiefs and looking glasses to an equal amount. We also agreed with them to cross over to Trice Island on the following morning, in order to search for a bed of coal. Our two friends, by name "Tallasa" and "Sadoola," remained on board, and ate and drank at our meals: they liked rice, rejected nothing that was offered them, and drank their arrack, not forgetting cocoanut water and occasionally toddy. The weather was exceedingly oppressive, the heat *under* the awning where we lived being frequently above 100°, and not a breath of air stirring: occasionally, however, a squall would refresh us a little. The cocoanuts here are not equal in size to those of Car-Nicobar, nor are they so plentiful; but the water of them is far sweeter and cooler, and to us appeared more refreshing under the burning sun. We found pine-apples growing wild in abundance, but they were not good: the limes, or rather lemons (for they are exactly the same in all respects—shape, flavour, colour and taste, as those of Spain) were excellent, but not very plentiful.

Wednesday, 23*rd April*.—At daylight started in the cutter for Trice Island, distant 5½ miles, provisioned for the whole day, our two friends, who spoke Malay, accompanying us in their canoe. We found the landing very difficult and dangerous: although there was but one break to the surf, the beach, which is of fine sand, being very steep, caused so

strong an under-tow, that had we attempted to approach in our own cutter, we should assuredly have been dashed to pieces: we were therefore obliged to anchor our boat at some distance from the shore, and land, one at a time, in their canoe. We examined all parts of the island, which is rather low and sandy, but covered with a beautiful vegetation. We found here several magnificent specimens of the banian tree: one in particular, situated nearly in the centre of the island, covers a space of ground one-third of a mile in circumference: its branches were literally swarming with birds, amongst which were parrots, several kinds of pigeons, *mynahs*, king-fishers, and one very large white eagle, which we wounded, but pursued in vain through the impenetrable jungle into which he fell; to all appearance this was a magnificent bird. We shot as many of the other birds as we could carry away. The west side of the island is a high abrupt hill or rock, and seems as if separated by some convulsion of nature from the opposite island of Track, distant about a rifle-shot, where the surf was so great that the natives declined landing us. After breakfast, we took some rest and waited for low water, in order to walk round the island in search of coal, of which we found only a few small pieces, scarcely the size of the palm of the hand. The rock consists of sandstone, clay, and slate, with occasionally a vein of some hard stone, like mica: we brought specimens of these, but found no coal-bed. The islanders, when questioned on the subject, called the water-worn fragments of coal "heaven stone" (*ikkoo battoo*), and said they were found after heavy thunder-storms and rain; that coal was never met with inland, nor washed down by hill torrents and ravines. These coals, particularly the large pieces, many of which are nearly 18 inches square, by 9 or 10 inches thick, bear evident marks of having been long subject to the action of the waves; but yet it seems hardly probable that they should have been washed up from the deep, and have passed through the tremendous surf, and over coral rocks, without being shattered into small pieces. We walked across the island, and then round it a distance of about 2½ miles, collecting shells, many of which were very beautiful. At 4-15 P. M. we quitted the island in the same manner that we landed, having been much amused with the day's sport, though disappointed in our main object. Arrived on board at 6 P. M., during a severe squall and rain that cooled the atmosphere.

Thursday, 24th April.—Boat employed in watering. We attempted to stuff the birds we had shot the previous day, but we were not very successful. Our native friends paid us visits. Another boat brought a sample of coal, a large piece said to have been found on Busch Island. Captain Lewis was engaged in surveying and sounding. Bar. 29·84; ther. 95°; hot and sultry. We were anxious to pay another visit to Trice, and, if possible, to Meroe, so we arranged with our friends Sadoola and Tallassa for another trip, in canoes only, to start by daylight.

Friday, 25th April.—Disappointed, the canoe did not come off till after breakfast, owing, it would appear, to a feast and debauch the previous evening. Whilst the boat was employed watering, we availed ourselves of the canoe to land on Busch Island, and made an excursion inland: we ascended, with much trouble, and with the assistance of our cutlasses, to the top of a hill, scarcely 175 feet high, but which was nearly

perpendicular and overgrown with jungle; from whence we had a tolerable view of the harbour. Rattans of very large size, in great abundance, but apparently of an inferior quality, grow on the island. We observed a tree of enormous size overthrown; it had evidently been attacked by white ants, which appear to be plentiful; the wood was the common poon of Penang. Returned to the beach, and entered one or two of the huts, in which we saw some images of Burmese manufacture: we then resumed our cruise in the inner harbour, where we found a cave swarming with small birds, some of which we shot, and found that they were the same that prepared the celebrated edible birds' nests; but we did not succeed in our attempt to find their nests. We found the remains of some Malay houses, which are inhabited six or eight months of the year; their occupants preparing tripang, collecting birds' nests and turtle-shell, and disposing at the same time of their rice-arrack, and printed goods: no doubt, they make a good thing of it. What the amount of trade may be, or whether it would remunerate a European, is difficult to say; the small population and their indolence and independence, render it doubtful. We bought a canoe for $5, in order to replace our lost jolly boat; and engaged our two friends to accompany us as guides, pilots, and interpreters. We visited their houses, obtained sundry curiosities, and returned on board at 3 P. M. There is excellent and safe anchorage far into the harbour. At the bottom of it, there seems to be an extensive lagoon covered with rank grass and trees, which looked very unwholesome: it is said to be swarming with alligators.

Saturday, 26th April.—At 4 P. M. weighed with the flood-tide, and stood out between Track Island and the N. point of Little Nicobar; a clear passage, with soundings from 30 to 50 fathoms, and distance between the islands 4½ miles: the tide sets through the channel at a rate of four knots an hour. Stood S. S. E. for the Great Nicobar, and fell in with some eddies and ripples, a phenomenon which is very common among these islands. We passed close to the E. side of Pulo Monthoule, between which and the Little Nicobar there is a safe passage. The E. side, like the N.-W., seems to be one mass of hills and jungle thinly inhabited, and containing but few cocoanut trees. Towards noon, crossed the mouth of St. George's Channel, passing inside of Pulo Cabra, a small high island with plenty of cocoanut and betelnut trees: had a few casts of the lead 4 miles off shore in 34 fathoms. At 6-45. P. M. anchored in a fine bay on the N. E. of Great Nicobar, in 27 fathoms, good holding ground. A small canoe came off with fruit, which was exchanged for cheroots.

Sunday, 27th April.—In the morning a canoe came alongside with fruit, and offered us some birds' nests, which we purchased, giving 2 fathoms of coarse handkerchiefs and an old waistcoat for 9½ drs. weight of nests. The islanders here spoke Portuguese, had been often at Nancowry, and even to Penang, having had much intercourse with the Malays; their appearance is not prepossessing. One or two pieces of coal were brought us here of rather better quality. The Great, like the Little Nicobar consists of but one succession of jungle-covered hills, rising from the shore: not a cleared spot is to be seen, except here and there a slip of land: the mountains are much higher. We went on shore, and were overtaken by a tremendous squall. On enquiring of our native friends from

the Little Nicobar, we were told that the interior of the Great Nicobar is occupied by a widely different race of savages, who are always at war with those on the sea-shore: they are armed with bows and arrows; and about their cruelty many tales are told. Captain Lewis was engaged surveying.

Monday, 28th April.—At daylight weighed, and stood to the southward with light S. W. airs. At 2-30 P. M. anchored in another bay, distant about 9 miles, surrounded by high hills and rocks: landed, and found a stream of fresh water which runs into a deep basin, where ships might fill up with ease, by landing close to it. Here the trees are very lofty and birds innumerable, but very shy, and soaring over the tops of the trees, beyond reach of shot: some of them bore resemblance to birds of paradise, but had not their brilliant colors. We met with no inhabitants, nor are there any cocoanut trees.

Tuesday, 29th April.—Went on shore to examine the formation of some rocks near the watering-place. Penetrated a considerable distance into the jungle, but found nothing interesting: the rocks consisted of the usual soft sandstone and clay slate; we brought off some few shells and a piece of coal. Captain Lewis measured the nearest hill, and found it to be 1,575 feet above the level of the sea; others inland rise much above it. At 11 A. M. weighed, worked to the southward, and at 2-30 P. M. anchored again in a deep bight, where we landed, and found that the natives had all fled: we saw six or seven small huts and a large Malay building; examined some curious rocks which were about a musket-shot from the shore, and covered with trees, on approaching which an immense cloud of birds rose on the wing.

Wednesday, 30th April.—At daylight sent our two guides on shore, to prevail on the natives to appear, but waited in vain. At 10-30 weighed and stood out; 1-30 P. M. a heavy squall from the westward with much rain; steered S. S. W. At 4 P. M. we ran in between a rock (10 feet above water) and the land, the passage being three quarters of a mile broad, but not safe, as there are several other rocks under water, and some just awash. At 6-30 P. M. anchored in a bight, in 14 fathoms sand, half mile from shore: cloudy dirty weather. Bar. 29·80; ther. 90°. Had no communication with the natives, and could see no huts.

Thursday, 1st May.—At daylight weighed and made sail for a bay on the S. E. side of the island. At 5-30 P. M. anchored in 8 fathoms, sandy bottom; a heavy swell from the south. This bay is remarkable for having rocks at both extremities: there is but one small landing-place, as the surf breaks violently all round the bay.

Friday, 2nd May.—Went on shore; the natives had fled from their huts, but came back again at the call of our guides. Found five or six rather respectable huts. The natives all, more or less, affect Malay manners. After surveying the bay, we went to examine the river at the bottom, and found it deep, and about a pistol-shot across, with a considerable bar at its entrance: we launched a canoe in order to ascend it, but not understanding the proper management, we narrowly escaped being upset; we were, however, well wetted: the natives informed us that it was navigable one or two days' journey inland; but we had not the means or the forces to carry on the expedition in this direction, even had the

season admitted of it. It occurred to us that the earliest Danish settlement under the East India Company, in 1756, might have been here; but we could find no trace of it, nor could the natives afford us any clue. They were not very communicative: on our asking about coal, they pointed to a promontory in a S. W. direction, as containing quantities of it: we therefore furnished ourselves with guides, proceeded a considerable distance in that direction, and examined two most remarkable rocks, having the appearance of a square battery with men or statues on the top; we found them to be immense masses of clayey slate stone, in which large pebbles had been imbedded. We shot some birds, and we saw numbers of large monkeys, but could not get near them. The timber is inferior, being loose and rent. Returned on board at 4 P. M., unsuccessful as to the coal; but we obtained some provisions in the shape of fowls and plantains. There seem to be more inhabitants here, on the southern part of the island, and the land is more open and level. The bay is exposed from S. to E., but offers good protection against the N. E. monsoon: landing is rather difficult.

Saturday, 3rd May.—Weighed at daylight, and worked out of the bay: hove to for Mr. Lowert and our two guides, who went in the canoe to explore the N. W. point of the bay; they found nothing remarkable, but brought a few specimens of the rocks. At 11-20 A. M., having turned the southern point and a reef extending 1½ mile beyond it, we bore away N. N. W., running as close along the shore as was prudent. We observed a few huts here and there, surrounded by cocoanut trees; but everywhere surf, and no safe anchorage nor landing in this monsoon, which now seems to have commenced in earnest. The land is lower but quite as jungly as on the other side: we could nowhere perceive symptoms of the inhabitants on the hills, not even a fire. Running before a S. W. breeze at the rate of eight knots an hour, at 5 P. M. we opened St. George's Channel, and being flood tide we stood in; the wind having suddenly fallen light, we got into the strong eddies, and were carried close to some ugly reefs extending off the north point of Pulo Caudul; fortunately the tide carried us clear through. We worked over under the Great Nicobar, and at 9 P. M. anchored in 38 fathoms: at 10 P. M. a heavy squall with much rain and lightning.

Sunday, 4th May.—Weighed at 7 A. M., and worked into 10 fathoms, sand and shells.

Mr. Busch being unwell, Mr. Lowert and the second officer went on shore with our guides and some of the islanders who came to visit us. They walked all over the island, found it well inhabited, and covered with cocoanut and betelnut trees: they brought off some curious specimens of rock, and also the *soi-disant* Rajah of Pulo Caudul, otherwise a wealthy, respectable, and ugly inhabitant of the island, by name Tomorra, who remained on board all night. The inhabitants of the Great Nicobar had deserted their huts, though one or two visited us in their boats: one boat from Pulo Caudul brought us a specimen of coal, small but very fair. This island being situate in the entrance of the channel, and directly between the Great and Little Nicobar, we resolved to erect a flagstaff on it; and, taking possession of the island in the name of His Majesty of Denmark, to hoist the Danish ensign, and give this in charge to the said Tomorra, Rajah of Caudul.

Monday, 5th May.—Weighed and worked the vessel close in shore of Pulo Caudul, and found 30 fathoms water close to. Having invested Tomorra with an honorary dress, he, with the other natives, accompanied Mr. Lowert on shore, where they erected a flagstaff in front of their huts: Mr. Lowert having instructed him (as well as the difficulty of language would permit of) in the meaning of the ceremony, and of the duties he undertook, delivered to him a certificate in English and Danish, and finally hoisted the flag, drinking His Majesty's health, to which our little vessel responded with a full salute.

At 4 P. M. we took leave of our friends, stood across the channel, and proceeded close to the coast of the Little Nicobar, where we saw only a few huts and a steep bold rocky shore. At 6 P. M. we rounded the E. point of Little Nicobar, and anchored in the channel between that and Monthoule Island, in 7 fathoms, but slipped into 20 fathoms. Went on shore, and saw a few huts and about 30 inhabitants, all friends and connexions of our guides. We shot a few birds, and returned on board.

Tuesday, 6th May.—At daylight landed on the Island of Monthoule, which is entirely of coral formation: there are a few huts and cocoanut trees; but nothing remarkable. We found no coal. The channel is 1¼ mile broad, and perfectly safe. At 8 A. M. weighed and stood for the N. W. bay of Little Nicobar, in order to land our guides and replenish our stock. At 12-15 P. M. anchored in the harbour, and at 2 P. M. our guides landed, laden with presents. Sent some planks on shore in order to erect a hut. Cloudy squally weather. Thermometer 89°.

Wednesday, 7th May.—Employed the carpenters to obtain samples of wood, and erecting a flagstaff near the houses. It came on to blow hard, with heavy swell from S. W.: we let go the second anchor, and veered out to 60 fathoms; bar. 29·85; ther. 77°. Mr. Busch had, for some days, suffered from a severe headache, and this weather rendered it much worse.

Thursday, 8th May.—Weather continued bad, raining and blowing hard, which rendered it rather uncomfortable on board the small craft. Weighed and stood further into the harbour for smooth water, and anchored in 11 fathoms, sand, and smooth as a pond: we sent down yards, housed topmasts, and attempted watering.

Friday, 9th May.—Blowing hard from S. W. to N. W., with much rain. In the afternoon, we hoisted the Danish flag on the new flagstaff, which was 63 feet in length. We took possession of the island in the name of His Majesty of Denmark, fired a salute, and left our guides Sadoola and Talassa to take charge of it till our return. This harbour, which without exception is the finest we have seen, and possesses many advantages, we designated after Horsburg, the N. W. Harbour. We did not think it necessary to give new names to any of the islands and other places we visited, reserving that task for a future expedition, and agreeing at the same time that nothing was more proper than to retain the native denominations where any existed.

Capt. Lewis having obtained the needful observations, and other information for an accurate marine survey of these islands, and being of opinion that continuing longer amongst them was useless, now that the monsoon had set in; and, moreover, finding that the sailing qualities of

the little vessel did not by any means come up to our expectations, it became a question whether we should proceed *viâ* Lancava to Penang, or return to Calcutta at once, Mr. Busch suffering at the time much from an intense headache, preferred the latter. Moreover, the coals we found, being an object deserving of attention, could only be examined in Calcutta. It would, besides, have been out of the question to bring over laborers from Penang during the rainy and unhealthy season. We therefore decided to complete provisions, and bear away for Calcutta, touching at Terressa on our way. Respecting the coal we could obtain no further information.

Saturday, 10*th May*.—The weather having moderated a little, we weighed and stood N. W. by W., with a fresh breeze from S. W., and occasionally a heavy squall: at 2 P. M. fetched the S. W. point of Katchall, having experienced a set of 21 miles in this short passage. Stood then for the Nancowry Channel, where we anchored at 6 P. M., in 11 fathoms, on the E. side of Katchall, distant 1 mile.

Sunday, 11*th May*.—Weighed, stood through the channel, and worked across to Terressa with a strong W. breeze and heavy squalls: rounded the E. point of Bompoka, and worked into the bay, where we anchored at 5 P. M., in 20 fathoms, about 100 fathoms from the shore of Terressa.

Landed, and found that the French Missionaries had left in the Steamer *Phlegethon*, which, about a fortnight ago, had visited the island, and stayed there three or four days. The Missionaries had left no letters for us, though we had told them of our intention of returning; but a verbal message and some birds were conveyed through our friend Gold-mohur. The Missionaries, having both suffered from repeated fevers, mentioned that there was a probability of their being removed, but not so soon. It is remarkable that they have left behind them all their property, and have told the natives that they might possibly return. Mr. Lowert went on shore, and was rather successful in his sport, bringing on board five or six different species of birds, which we helped him to stuff. He also brought specimens of the soil on the high land, which is a red clay, with stones having a burnt appearance, and one or two being certainly metallic; he likewise brought a sample of the stunted tree or bush that grows here, but unfortunately our goat got hold of it, and devoured it greedily. We here purchased a moderate quantity of fine turtle-shell, for German-silver soup-ladles of various sizes. We obtained about 20 pounds, some of it very stout and fine.

Monday, 12*th May*.—Captain Lewis completed his survey. Mr. Lowert made several excursions on shore, and found that the rain had rendered the roads to Lackshee very bad. Captain Lewis brought some fine specimens of dammer, which can be had here in quantity, also some very large shells nearly 2 feet in diameter, which are much valued by the Chinese: we purchased a number of fowls, and a curious *squid* or ink fish.

Tuesday, 13*th May*, 12 A. M.—Weighed and steered across for the Island of Tillangchong. We endeavoured to round the south point, but were unable to do so, partly on account of the heavy sea, and partly by reason of the vessel, which, as before mentioned, does not perform what we had expected of her. At 4 P. M. we bore away for Calcutta. The Island of Tillangchong has only of late become inhabited by some

emigrants from Nancowry and the north of Carmorta: its appearance is hilly and jungly, with breakers all along the west side; nothing is known of it, but it would probably have well repaid a visit, had more moderate weather permitted of our approaching it.

Wednesday, 14th May.—We rounded the N. point of Car-Nicobar, distant 1½ mile. Fresh S. W. breeze, and fine weather. Ther. 95°, bar. falling.

Thursday, 15th May.—Steering N. N. W. with S. W. and S. breeze; we sighted a brig standing to the westward, with a top-gallant sail bent instead of the fore-topsail—ther. from 78° to 100°, under the awning.

Friday, 16th May.—Fine weather and hot.

Saturday, 17th May.—Passed the Barque *Champion* from Calcutta to the Isle of France.

Sunday, 18th May.—Strong W. wind and cloudy weather. At midnight we crossed over the Pilot's Ridge.

Monday, 19th May.—At daylight hove to for a pilot, but not seeing any, we stood across the tails of the sands, and at 1 P. M. passed the reef buoy and bore away for the inner floating light, with a strong S. W. breeze. It being ebb at the time, and the wind and tide meeting, the sea ran tremendously high, and often threatened to swamp the *Espiégle*. We passed the inner floating light, and several vessels beating out, but could get no pilot: stood on for Kedgeree, where we found a pilot-vessel at anchor; brought up close to her, and got a young mate to take us up.

Tuesday, 20th May.—At 2 P. M. anchored off Calcutta, having been absent in all two months and six days.

Copy of Certificate given to Tomorra, alias *the Rajah of Pulo Caudul, in whose charge the Danish Ensign was left.*

"To all persons who may visit the Islands of Pulo Caudul and Great Nicobar, we do hereby certify that, having this day hoisted the Danish Ensign on these two islands, we have resumed possession thereof in the name of His Danish Majesty, King Christian VIII.: we have entrusted the flag to the headman of Pulo Caudul, by name Tomorra, in order that he may guard the same until further measures can be taken for the contemplated occupation and colonization of the said islands.

"As far as our limited knowledge goes, we recommend the said Tomorra as an honest and useful man."

(Signed) H. LEWIS,
Comdg. L'Espiegle.

(Signed) H. BUSCH,
In charge of the Expedition.

(Signed) P. C. LOWERT,
Attached to the Expedition.

On board the Schooner L'Espiegle, *off Pulo Caudul,*
5th May 1845.

[The same in Danish and English was given to Sadoolah at Little Nicobar.]

APPENDIX.

Analytical Report on specimens of Coal from the Nicobars, 31st May 1845.

No. 1.—Fibrous Slaty Coal, with large conchoidal cross fracture, principal fracture curved slaty: lustre of the cross and longitudinal fractures shining black, but dull on the slaty fracture.

Sp. gr.	1 3
Bituminous and volatile matter	61 4
Carbon	34 2
Dark brown ash	4 2 in
	100 parts

No. 2.—Alternate slaty layers of black pitchy coal, and fibrous slaty bituminous schist.

Sp. gr.	1 3
Bituminous and volatile matter	57
Carbon	40
Ash (dark brown)	3 in
	100 parts

No. 3.—Mass of hard coal, much weathered, somewhat of a fibrous structure, with a conchoidal cross-fracture. Cross-fracture shining, with pitchy black lustre; the longitudinal fracture dull.

Sp. gr.	1 3
Volatile and bituminous matter, ...	49
Carbon	46
Dark brown ash	5 in
	100 parts

These specimens of coal, though collected in various parts of the Nicobars, would seem to be very much alike in their nature, though differing a little in appearance.

They have been no doubt injured by long exposure in the sands to the weather and to the sun as well as water. To this cause is due their burning with little flame, as well as their hardness and great specific gravity. But otherwise they are, or at least were, good coal. They seem to bear both in appearance and chemical properties a nearer resemblance to the pitch or Cannel coal of the Little Tenasserim river, than any other specimen I have seen.

The circumstance of their being all so nearly alike is a favorable indication of the probable existence of one great bed, extending to a considerable proportion through the islands.

(Signed) J. McCLELLAND,
Secretary, Coal Committee.

H. Co.'s Dispensary,
31st May 1845.

The following are the only collections in Natural History which the officers of the expedition succeeded in preserving :—

MAMMALIA.

Macacus cynomolgus.—This is the common small long-tailed monkey of the neighbouring coasts, which to the northward is replaced along the eastern side of the bay by *M. carbonarius.*

Sus.—The Nicobar pigs appear to have been derived from the Chinese race, turned loose upon some of the islands.

BIRDS.

Todiramphus collaris.—Common blue and white kingfisher. This bird is plentiful along the whole eastern side of the bay, and in the Bengal Soonderbuns. On the western side it is rare.

Merops Philippinensis.—Blue-tailed bee-eater: abundant both in India and in the Malay countries.

Collocalia esculenta.—The constructor of the celebrated edible nests, the substance of which is secreted by the very large salivary glands with which this bird is provided, in common with other species of the group of swifts.

Gracula religiosa.—The large hill *mynah* of the Malay countries, which is found thence up to Assam and in the Sub-Himilayan region; but in the Peninsula of India it is replaced by another and smaller kind, the *Gr. Indica.*

Calornis cantor.—This species is very common in the Nicobars. It is generally diffused through the Malay countries, and is found up the eastern side of the Bay of Bengal, so high as Tipperah.

Oriolus.—A species of Oriole, or Mango-bird, nearly allied to the *O. chinensis,* and being the fourth or fifth kind now known which has a black nape-mark, more or less broad in the different species.

Hypsipete.—A species nearly allied to *H. Malaccensis,* and which therefore may be just admitted into the genus in which it is here placed.

Myiagra cærulea.—This beautiful fly-catcher is common to India and the Malay countries, and is especially numerous in Lower Bengal during the cold season.

Zosterops Nicobaricus, a new species distinct both from *Z. annulosus* of India, and *Z. flavus* of the Malay countries.

Nectarinia pectoralis.—A common Malayan species of honey-sucker.

Treron chloroptera.—A species of *hurrial* pigeon, nearly allied to *Tr. pompadora* of India, but larger, and with more green on the fore-part of the wings.

Carpophaga bicolor.—The beautiful white cliff pigeon of the Straits. It is very common in the Nicobar Islands.

C. œnea.—Another very handsome pigeon, common to India and the Malay countries, but especially numerous in the territories lying eastward of the Bay of Bengal.

Calœnas Nicobaricus.—The well known splendid ground pigeon of the Nicobars. Some young birds of this species were caught, by giving chase to them on the ground; and two were brought alive to Calcutta. It is also met with in the Andamans, and in the Cocos Islands.

Pelicanus Philippensis.—The smaller Indian pelican, which seems to be the predominating species in the Malay countries.

Phaeton æthereus.—A specimen of this, the boatswain-bird of mariners, was shot and obtained during the run to the Sandheads. It is a different species from the one so common at the Mauritius.

Reptiles.

Chelonia imbricata.—The true tortoise-shell turtle.

Ch. midas.—The edible turtle: some pieces of shell were brought which evidently belonged to this species.

Vipera?—A small viper, a more pointed head than is seen in the more characteristic members of this genus.

Pelamydes platurus, or an allied species having a much greater portion of its tail banded, the bands diminishing to festoons anteriorly, until they are gradually lost.

Fishes.

Dactyloptera.—A second species of this genus from the Bay of Bengal, distinguished by the much greater dimensions of its ventral fins, and by several other characters.

Mollusca.

Sepia.—A large species of cuttle or squid.

Crustacea.

Pagurus punctulatus, or a nearly allied species, common in the Bay of Bengal, and attaining seven or eight inches in length.

Letters on the Nicobar Islands, their Natural Productions, and the Manners, Customs, and Superstitions of the Natives, &c. &c. Addressed by the Rev. John Gottfried Haensel (the only surviving Missionary), to the Rev. C. I. Latrobe, 1812.

To William Wilberforce, Esq., M. P., &c., &c., &c.

Dear Sir,—Your obliging inquiries concerning the attempt made by the Church of the United Brethren to establish a mission in the Nicobar Islands, I have not been able hitherto to answer as fully as I wished, the documents in my possession being few and unconnected, and a reference to *Crantz's History of the Brethren*, pp. 504 and 614, furnishing but a short notice of the commencement of that undertaking. The difficulty attending our correspondence with our Brethren on the Continent has, likewise, so much increased, that I cannot expect to be soon supplied with more detailed accounts from our archives; and the continuation of *Crantz's History*, in which a concise report of the progress of the mission is inserted, is not translated into English. I was glad, therefore, unexpectedly to meet with an opportunity of conversing with John Gottfried Haensel, a Missionary from St. Thomas in the West Indies, who was formerly employed in the Nicobar Mission, and resided for seven years in the Island of Nancowry. This worthy veteran has spent eighteen years in the East, and seventeen in the West Indies, and altogether thirty-eight years in the service of the Brethren's missions; yet by God's blessing, after suffering numberless hardships and dangerous illnesses, at the age of sixty-three, he remains a most active, cheerful, and zealous laborer in the Lord's vineyard.

In the course of our frequent conversations on various subjects relating to the occurences of his past life, he interspersed so many curious and interesting particulars concerning his residence in the Nicobar Islands, that I could not help requesting him to commit them to writing as they might occur to his recollection. This he very obligingly consented to do; and though, by my particular desire, he did not study to make out a complete history, the labor and formality of which might have suppressed, in a great degree, the liveliness of his manner, but left the arrangement of the subjects to me; yet I am of opinion that you will read what he has written with pleasure, and esteem these fragments worthy of preservation. Many of your questions will be pretty satisfactorily answered by them, and I have therefore translated them for your perusal. They exhibit a degree of patience and perseverance in the prosecution of missionary labors, in hope against hope, such as has hardly been exceeded in our Greenland and North American Missions, with the history of which you are acquainted.

The mission of the United Brethren in the Nicobar Islands was undertaken in the year 1758. A person of high rank at the Court of Denmark having intimated to the Directors of the Brethren's Missions that it would give particular pleasure to the King if some of their Missionaries would settle on the Nicobar Islands and endeavour to instruct the inhabitants in the principles of the Christian religion, they resolved to comply with His Majesty's wishes.

A commercial establishment had been formed on these islands in 1756, when the name of Frederic's Islands was given to them; but the first attempt miscarried, and almost all the colonists sent thither from Tranquebar soon died. The Brethren, however, were not discouraged. After some negotiation with the Danish Asiatic Company, having obtained an edict granting them necessary privileges to preach the gospel to the heathen, and to maintain their own church discipline and worship, they agreed to begin the work, and several Brethren offered themselves for this service. The names of the first Missionaries were George John Stahlman, Adam Gottlieb Voelcker, and Christopher Butler. They arrived July 2, 1760, at Tranquebar, and were received by the Governor and all the inhabitants with much cordiality.

As an establishment on the Coast of Coramandel was found indispensably necessary to support the new mission, they bought a piece of ground, about a mile from Tranquebar, built a house with out-houses and work-shops, and maintained themselves by their several trades. This settlement was called *The Brethren's Garden.*

A second Company followed them in the same year. According to directions given by the Brethren in Europe, they carefully avoided all interference with the worthy Lutheran Missionaries residing at Tranquebar, by whose pious exertions many Malabars had been converted to Christianity.

The Danish East India Company not being able to renew their settlement in the Nicobar Islands as soon as was expected, offers were made to the Brethren by the English Governor of Bengal to settle on the Ganges; but they resolved to wait with patience for an opportunity to prosecute their first plan, and obtain the original aim of their mission to the East Indies. This presented itself in 1768, when the Danish Government formed a new establishment in the Nicobar Islands. Six Brethren were immediately ready to go thither. They settled on Nancowry.

In 1769, several officers of the Company, with a party of soldiers and black servants, arrived from Tranquebar, and brought with them a considerable quantity of merchandize. But they died so fast that in 1771 only two European soldiers and four Malabar servants survived. This second failure deterred the Company from repeating their attempt, and the project of establishing a factory in the Nicobar Islands was abandoned. The four Brethren residing there were charged with the sale of the remaining goods, and experienced no small inconvenience and trouble from this commission.

In 1773, however, a vessel was sent from Tranquebar, which relieved them, by taking back the articles of trade left on hand, and bringing them the provisions they wanted.

As the means of thus supplying the Missionaries with the necessaries of life, by uncertain communications with Tranquebar, were too precarious, the Brethren resolved to venture upon annually chartering a vessel for that purpose. Mr. Holford, an English gentleman residing at Tranquebar, rendered them herein the most essential service. He joined them in fitting out a small ship, which arrived in 1775 with provisions, &c.,

at Nancowry, and returned with the produce of the country, the sale of which, however, by no means repaid the expense attending the outfit. Mr. Holford, nevertheless, did not lose courage. Another vessel was fitted out and sailed in 1776, but having missed the entrance into the Nicobar Islands, after long combating contrary winds and currents, she was obliged to cast anchor near Junkceylon, where she deposited her cargo. A third vessel had meanwhile set out for Nicobar, but was equally unsuccessful. Thus the difficulties attending the support of the settlement increasing, this and other causes mentioned in the course of the following letters occasioned the final abandonment of the mission in 1787.

You will, however, perceive that Mr. Haensel expresses an opinion concerning future attempts to preach the gospel to the natives of the Nicobar Islands, which is by no means discouraging.

With the sincerest esteem and gratitude for the many proofs you have given of your kind notice of the labors of the Church of the United Brethren among heathen nations—

I remain ever, Dear Sir, Your most faithful friend and servant,

C. I. LATROBE.

LONDON,
12*th May* 1812.

LETTER I.

As you have desired me to repeat in writing the substance of our conversations respecting the Nicobar Islands, and the mission of the Brethren begun there in 1758, in which I was employed from the year 1779, till the attempt was relinquished in 1787, I will endeavour, as far as my recollection will enable me, to satisfy your wishes.

The Nicobar Islands are situated at the entrance of the Bay of Bengal, in 8° N. lat. and 94° 20′ E. long., N. of Sumatra. Nancowry is one of the southernmost, and forms, with Camarty* to the north, a commodious harbour, sheltered to the eastward by a long but narrow island, called Trincuttee flat, and abounding in cocoa trees; and to the westward, by Katchall, which is larger. Ships may ride here very safely.

On the N. W. point of Nancowry, behind a low hill, and contiguous to the best landing-place, on a sandy beach, lay the missionary-settlement of the United Brethren, called by the natives, *Tripjet*, or the dwelling of friends, where I arrived in January 1779, in company of Brother Wangeman. On our passage hither we were driven by contrary winds to Queda, on the Malay coast.

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* See *Asiatic Researches*, Vol. II. p. 344; III. p. 292; IV. pp. 132, 328. *Rennel Memoir*, p. 40, Carmorta is called Sampieri in Mr. Haensel's MSS., and Sombreiro in French chart.

Being at last enabled to proceed, we set sail for Nancowry. The Captain steered first for Pulo Penang (now Prince of Wales Island), pretending that he wanted fresh water; but he employed his lascars chiefly to cut rattan,* a plant used for rigging.

We found at Nancowry three Missionaries, Liebisch, Heyne, and Blaschke. The latter being very ill, returned to Tranquebar by the vessel which brought us hither, and soon departed this life. Not long after his return, Brother Liebisch fell sick and also departed. Our number was therefore reduced to three, and I was soon seized with so violent a fit of the seasoning fever, that my Brethren, expecting my immediate dissolution, commended me in prayer to the Lord, and took a final leave of me. After this transaction, I fell into a swoon, which being mistaken for death, I was removed from the bed, and already laid out as a corpse. When I awoke and inquired what they were doing, and why they wept, they told me that, supposing me to be quite dead, they were preparing for my burial. My recovery was very slow; and, indeed, during my whole residence in Nancowry, I never regained perfect health.

After the decease of the Brethren Wangeman and Liebisch, I was left alone with Brother Heyne. We were both ill and suffered the want of many necessaries of life: but the Lord, our Saviour, did not forsake us.

Letter II.

The vessel sent to Nancowry did not arrive till 1781, and brought a very small portion of provisions for our use, and neither wine, nor any other liquors whatever, the crew having expended the greater part of what was destined for us on their long voyage, and during a detention of four months at Queda, on the Malay Coast. We were, however, happy to receive Brother Steinman, who was young, lively, and every way qualified for the service, so that we promised ourselves much assistance from him; but in less than a month after his arrival, it pleased the Lord to take him from us by death. You may suppose what we felt on being again left alone, in want of even the most necessary articles of subsistence.

We were as diligent as our wretched circumstances would admit in clearing land and planting to obtain what we wanted for our support; and having only three negroes to cook, wash, and do other jobs, we frequently labored beyond our strength, and brought upon ourselves various illnesses. But there seemed no help for it. At the same time we exerted ourselves to learn the Nicobar language.

Not till 1783 had we the satisfaction to see the Brethren J. Heinrich, Fleckner, and Raabs arrive to our assistance, in company of the mate of the vessel, with which they set sail from Tranquebar. While they were lying in the roads of Junkceylon, a French privateer

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* Calamus Rotang. Lin.—*Miller's Gard. Dictionary.*

came and claimed her as a lawful prize, because, on searching her, he found a few old English newspapers in a trunk belonging to Mr. Wilson, an English gentleman on board, who had escaped Hyder Ali's prison. This was pretence sufficient for a Frenchman to seize upon a neutral Danish vessel, nor could any redress be ever procured, to the great loss of the mission. After long and vexatious detention, the mate and the three Brethren purchased a Malay prow for 75 dollars, and stole off in the night, as the Malay Prince would not suffer them to go. Thus we received, instead of our expected stock of provisions, only more mouths to feed. However, we rejoiced to see our dear fellow-missionaries, and did what we could for their relief. As the prow was unfit to go to sea without proper sails,—those with which they arrived being nothing but old rotten mats,—we worked up our whole stock of linen and sailcloth, and even some of our sheets, and were ten days employed in making sails and fitting her for the voyage. A black sailor was also procured, and the mate, with the Brethren Raabs and Heyne, left us for Tranquebar.

The three following years of my stay were spent in fruitless attempts to preach the gospel to the natives, and the arrangements proposed and made by the new-comers seemed all to fail. But I cannot help observing that, when we speak of the total failure of our endeavours to promote the conversion of the natives, we have cause in a great degree to blame ourselves. For my part, I must confess with humble shame, that I soon lost my faith and courage, brotherly love having ceased to prevail amongst us.

Our external situation became more and more irksome, and we could scarcely procure the means of subsistence. My health had suffered so much by continual sickness, anxiety, and hard labor (for the greater part of the management of affairs fell upon me), that I was apparently fast appoaching my end, at the thoughts of which I rejoiced greatly, delivered my accounts and all my concerns into the hands of Brother J. Heinrich, looking forward with longing to be at rest with Jesus. I felt his comfort, pardon, and peace in my soul, and hoped that every day would be my last. I had running sores on my legs, and a total obstruction, with tormenting pains in the bowels, and expected that mortification would soon take place and put an end to my misery. Unexpectedly a Danish vessel arrived in our harbour, on board of which was Brother Sixtus. He was commissioned to examine into the state of the mission, and to bring home such as were still alive.

A voyage seeming to offer the only hope for my recovery, I was conveyed on board, apparently in a dying state, and set sail the same day for Queda. During the voyage the pain in my bowels was excruciating, and the motion of the ship afforded me no relief, insomuch that I could bear no other posture than lying prostrate on deck. In this situation it occurred to me that I had once read in Van Swieten's account of his cures, that he had found the plentiful use of honey beneficial in cases of obstruction. As soon, therefore, as we landed, I procured a sufficient quantity, and mixed it plentifully with my food and drink. My only nutriment indeed consisted of rice boiled in

water, to which I added an equal quantity of honey, as also to all the water I drank, cold or warm, of which I took plenty, having a constant thirst upon me. Already on the first day it operated by sickness at my stomach and frequent vomitings, which rendered its taste extremely nauseous and unpleasant. But perceiving that it also relieved my principal complaint, I persevered, and experienced daily more of its salutary, cooling, and healing effects. As there is plenty of honey at Queda, I laid in a large stock for the voyage.

Here I became acquainted with Mr. Scott, an English captain, who informed me that Captain Light was in Bengal, and had lost his wife by death. From hence we returned to Nancowry, where I found that Brother Sixtus had departed this life ten days after my leaving the island. Brother J. Heinrich accompanied me to Tranquebar, and Fleckner remained alone.

When we arrived at Tranquebar, we represented to the Governor that it was necessary that the vessel should immediately return for the relief of the mission, to which he agreed; and Fleckner being re-called, the Brethren J. Heinrich, Rudolphi, and Soerensen were sent thither in May 1785. The latter soon departed this life, as likewise Fleckner at Tranquebar. In September I returned to Nancowry, being commissioned to convey the house, belonging to the Imperial settlement on Sombreiro (Carmorta) to our place, which I accomplished. Our old stone-house was turned into a magazine, and the Missionaries obtained a comfortable dwelling, and a sufficient supply of provisions and other necessaries. But as to any success in making the natives acquainted with the gospel, all our exertions seemed in vain.

After my return to Tranquebar in 1786, Brother Rudolphi left Nicobar, and arrived, after a long and tedious voyage, at Tranquebar in 1787, not long after Brother J. Heinrich departed this life, and Brother Kragh remained alone.

The loss of so many valuable men, the total failure of the object of the mission, and the want of proper Brethren, willing to devote themselves to so hopeless a cause, at length prevailed, and it was resolved to give up the mission. I was again deputed to go to Nancowry to fetch Brother Kragh, and all effects belonging to the mission, and to deliver up the premises to the Governor, who, on our representation of the impracticability of our supporting the mission any longer, had consented to send a lieutenant, a corporal, and six privates to take possession. I accompanied these people, and delivered to them every thing I could not carry away.

Words cannot express the painful sensations which crowded into my mind while I was thus executing the task committed to me, and making a final conclusion of the labors of the Brethren in the Nicobar Islands. I remembered the numberless prayers, tears, and sighs offered up by so many servants of Jesus, and by our congregations in Europe, for the conversion of the poor heathen here; and when I beheld our burying-ground, where eleven of my Brethren had their resting-place,

as seed sown in a barren land, I burst into tears, and exclaimed—"Surely all this cannot have been done in vain!" Often did I visit this place, and sat down and wept at their graves.

My last farewell with the inhabitants, who had flocked to me from all the circumjacent islands, was very affecting. They wept and howled for grief, and begged that the Brethren might soon return to them. We always enjoyed their esteem and love, and they do not deserve to be classed with their ferocious neighbours—the Malays; being, in general, kind and gentle in their dispositions, except when roused by jealousy or other provocations, when their uncontrolled passions will lead them into excesses, as some of the Danish soldiers experienced. We always found them ready to serve us.

Letter III.

I proceed to answer the questions you have put to me, and to give you some short account of the appearance of the country in the Nicobar Islands, and the customs of the inhabitants.

The most of these islands are hilly, and some of the mountains of considerable height: but Trinculttee, Tafouin, and Car-Nicobar are flat and covered with forests of cocoa trees. The other islands have likewise a large proportion of cocoa and areca-palms, and an immense quantity of timber trees of various kinds, some of them of enormous size. All the valleys and sides of the hills to a considerable height are thickly covered with them, insomuch that the light of the sun has not been able for ages to penetrate through their foliage. They are in many places so closely interwoven with immense quantities of rattan and bush-rope, that they appear as it were spun together, and it is almost perfectly dark in the woods. Most of the plants and trees bear fruit, which falls down and rots. All these circumstances contribute to render the climate very unhealthy, the free current of air being wholly impeded; even the natives experience their baneful effects, but, to a European constitution, they are of the most dangerous nature.

I am no botanist, and can therefore give you but little information concerning the different species of trees, shrubs, and plants which seem to thrive here in such luxurious abundance, but will only add, that that most useful of all trees, the cocoa, is of very easy growth, and thrives best on the sea coast, where its roots and stem are reached by the flood-tide. The nut falling into the sand is soon covered by it, and springs up in great strength. I have planted many, and enjoyed the fruit after five years. When the nuts are ripe, you hang them about the house: in a short time they shoot out sprigs and branches, and when these are about a yard long you may put them into the ground, where they continue to vegetate rapidly.

Another most beautiful and valuable tree is the mango *(? mangosteen)* the fruit of which is extremely useful, both for eating and medicinal purposes. The eatable part is enclosed in a shell, which lies in a thick pulpy rind. Its taste is spicy, very grateful, betwixt sour and

sweet, and so wholesome, that there is hardly any fear of eating too plentifully of it. The shell is bitter and astringent, and the Nicobar doctors or sorcerers administer a decoction of it against fevers and agues, to which they, as well as strangers, are much subject.

There is also a vast variety of roots, fruits, and herbs with the medicinal virtues of which the sorcerers are well acquainted. They are, no doubt, noticed by various authors, but I am not able to describe them.

As to the beasts and reptiles existing in these islands, I shall only mention what has come under my own observation, and remains in my recollection. There are no wild beasts here, such as tigers and leopards, as on the Coast of Coromandel. Monkeys are found in the southernmost islands, Sambillang, Tavap, and Katchall. In some others are large herds of buffaloes and other cattle, originally brought thither by the Danes, but which have run wild in the woods since the abandonment of the colony. They have increased prodigiously; and as the upper regions of the mountains are covered with vast quantities of fine grass, they find food in abundance, and grow to a large size, especially the buffaloes. These are always seen in herds, and I never ventured to shoot any, though I longed to procure some of their flesh for our use. Dogs and swine are found in all the islands.

Serpents are numerous in some places, but they are far less abundant and venomous than on the Coast of Coromandel. The chief cause of this difference I am apt to ascribe to a custom prevalent among the natives, of setting the long grass on the mountains on fire two or three times a year. As these reptiles like to lay their eggs in the grass, great quantities of them are thus destroyed. One kind of serpent struck me here as a singular species; it is of a green color, has a broad head, and mouth like a frog, very red eyes, and its bite is so venomous, that I saw a woman die within half an hour after receiving the wound. She had climbed a high tree in search of fruit, and not observing the animal among the branches, was suddenly bitten in the arm. Being well aware of the danger, she immediately descended, but on reaching the ground reeled to and fro like one in a state of intoxication. The people brought her immediately to me; and while I was applying blisters and other means for extracting the poison, she died under my hands.

I saw but few scorpions, but among them an unusually large species, of a red color, said to be extremely venomous. They were lying in a boggy place, and I had no means of taking them.

One of the most formidable animals with which these islands abound, is the crocodile or alligator. Car-Nicobar is overrun with them, as are all the other Nicobar Islands which have fresh-water lakes and streams. They are of two kinds, the black kayman and the proper crocodile. The latter is said never to attack live creatures but to devour only carrion, and is, therefore, not considered dangerous. Of the correctness of this opinion I had once ocular proof. I was walking at Queda along the coast, and looking at a number of children swimming and sporting in the water. On a sudden, I observed a large crocodile proceed towards

them from a creek. Terrified at the idea of the danger they were exposed to, I screamed out, and made signs to some Chinese to go to their assistance, but they laughed me to scorn as an ignorant stranger. I really afterwards saw the monster playing about among them, while the children diverted themselves by pretending to attack him and drive him away. The kayman is less in size and very fierce, seizing upon every creature that has life, but he cannot lift anything from the ground, as the lower jaw projects.

The bats of Nicobar are of a gigantic size; I have seen some, whose outstretched wings measured from five to six feet across the back, the body being the size of a common cat. They are of two kinds, the head of one somewhat resembling a dog, and that of the other a cat; the former making a barking, and the latter a mewing noise, when on the wing. I never saw more than one at a time. They appear hideous, and in their solitary flight resemble a clock in motion, chiefly and awkwardly perching upon the mango *(? mangosteen)* tree, the fruit of which they eat, breaking down the smaller branches, till they light upon such as are able to bear their weight.

Of birds I shall only notice one, called by some the Nicobar swallow,* but I will not venture to determine its generic character. It is the builder of those eatable nests, which constitute one of the luxuries of an Indian banquet. These birds are called *Hinlene* by the natives, and build in fissures and cavities of rocks, especially in such as open to the south. In the latter the finest and whitest nests are found, and I have sometimes gathered fifty pound weight of them on one excursion for that purpose. They are small, and shaped like swallows' nests. If they are perfect, 72 of them go to a catty, or $1\frac{3}{4}$ pounds. The best sale for them is in China. After the most diligent investigation, I was never able fully to discover of what substance they are made, nor do any of the opinions of naturalists, with which I have become acquainted, appear satisfactory to me, neither have the authors alluded to ever seen the birds. They have remarkably short legs, and are unable to rise if they once fall or settle on the ground. I caught many in this state, and after examining them threw them up into the air, when they immediately flew away; they cannot, therefore, as some suppose, obtain their materials on the coast, or from rocks in the sea. My opinion is, that the nests are made of the gum of a peculiar tree, called by some the Nicobar cedar, and growing in great abundance in all the southern islands. Its wood is hard, black, and very heavy. From December to May it is covered with blossom, and bears a fruit somewhat resembling a cedar or pine-apple, but more like a large berry full of eyes or pustules, discharging a gum or resinous fluid. About these trees, when in bloom or bearing fruit, I have seen innumerable flocks of these little birds flying and fluttering like bees round a tree or shrub in full flower, and am of opinion that they there gather the materials for their nests. I relate the fact, having often watched them with great attention, but will not venture to affirm that I have made

* Hirundo edulis. Linn. Syst. Nat.

a full discovery. I observed before, that these birds dwell in cavities of rocks, like bees in a hive, flying in and out, and building their nests close together like martins or swallows. The hen constructs a neat, large, well-shaped nest, calculated for laying and hatching her eggs, and the cock contrives to fix another, smaller, and rather more clumsy, close to his mate: for they are not only built for the purpose of laying eggs, but for resting-places, whence they may take wing. If they are robbed of them they immediately fall to work to build others, and being remarkably active, are able to finish enough in a day to support the weight of their bodies, though they require about three weeks to complete a nest. During the N. E. trade wind, they are all alive and fly about briskly, but as soon as the wind comes round to the S. W. they sit or lie in their nests in a state of stupor, and show animation only by a kind of tremulous motion over their whole body. I have sometimes taken one out of his nest in this state, and laid him on the palm of my hand, when I observed no sign of life about him but this trembling, and on returning him to his place, could hardly prevent him from falling on one side. If their nests were taken away at that season, the poor birds must inevitably perish*.

I did not perceive any great variety of birds in these islands; but wild pigeons and parrots are numerous.

As to fishes, the sea abounds with various descriptions, but my attention was principally directed to shell-fish, which are found in great abundance and beauty on most of the islands. The mission being in part supported by collections of these and other natural curiosities, made by me and other Brethren, whose time and disposition allowed of it, it became at one time peculiarly my business, and though I possessed no previous knowledge of these things, and would not venture to determine upon a proper classification of the various natural productions which I collected, both on the Coast of Coromandel and in the Nicobar Islands, yet constant practice and experience gave me by degrees sufficient skill to distinguish what was really worthy the attention of naturalists. I had moreover the satisfaction to perceive the blessing of God resting upon these exertions, by which a considerable part of the heavy expenses of the mission were defrayed, there having been at that time a great demand for productions of this kind in England, Holland, Denmark, and other parts of Europe.

On my frequent excursions along the sea coast, it sometimes happened that I was benighted, and could not with convenience return to our dwelling; but I was never at a loss for a bed. The greater part of the beach consists of a remarkably fine white sand, which above high water-mark is perfectly clean and dry. Into this I dug with ease a hole large enough to contain my body, forming a mound as a pillow for my head: I then lay down, and by collecting the sand over me, buried myself in it up to the neck. My faithful dog always lay across my body, ready to give the alarm, in case of disturbance from any quarter. However, I was under no apprehension from wild animals.

* See Fontana's account of these birds. *Asiatic Researches*, Vol. III., p. 292.

Crocodiles and kaymans never haunt the open coast, but keep in creeks and lagoons, and there are no ravenous beasts on the island. The only annoyance I suffered was from the nocturnal perambulations of an immense variety of crabs of all sizes, the grating noise of whose armour would sometimes keep me awake. But they were well watched by my dog; and if any one ventured to approach, he was sure to be suddenly seized and thrown to a more respectful distance; or if a crab of more tremendous appearance deterred the dog from exposing his nose to its claws, he would bark and frighten it away, by which, however, I was often more seriously alarmed than the occasion required. Many a comfortable night's rest have I had in these sepulchral dormitories when the nights were clear and dry.

But before I dismiss this subject, I cannot conclude my letter without observing that, on the continent, as well as in some of the other East Indian islands, it would be hazardous in the extreme to expose one self in this manner during the night, on account of the number of wild beasts of various descriptions with which they abound. I feel truly thankful to God that He preserved me on my many journies from all harm; nor can I speak of having ever been in much danger. Yet one instance of His merciful preservation of my life I must be permitted to add.

On one of my voyages either to or from Queda (for I have forgotten the precise time), a Danish ship hailed us, and approaching incautiously, ran foul of our stern, and broke our flag-staff. We therefore put into a creek, and some of our men landed near a wood to cut down a tree to make a new one. Hoping to be able to procure some fresh meat for supper, I accompanied them, armed with a double-barrelled gun. While they were at their work, I walked on the outside of the wood, eagerly looking for some game, and soon discovered among the high grass an object, which, by its motions, I mistook for the back of a hare. I took aim, and was just going to fire, when the animal rose up, and proved to be a tiger, of which only the top of the head had been visible. My arm involuntarily sunk down; I stood motionless with horror, expecting that the creature would immediately make a spring at me, and gave myself up for lost; but, by God's providence watching over me, the beast seemed as much alarmed as I was, and after staring at me for a few moments, turned slowly about, and began to creep away like a frightened cat, with his belly close to the ground; then, gradually quickening his pace, fled with precipitation into a distant part of the wood. It was some time before I recovered presence of mind sufficient to trace back my steps towards the beach, for I felt my very heart tremble within me. As I approached the water, there was a piece of jungle or low thicket before me, and I was turning to the left, to pass round by the side opposite the boat, thinking that I might yet find some game, when, seeing the men laboring hard to drag the tree they had felled towards the water, I altered my course, and went to their assistance. No sooner had I entered the boat, than I discovered on that side of the jungle to which I was first going, close to the beach, a large kayman watching our motions, whom I should certainly have met had I gone round by the way I intended. Thankful as I now felt

for this second preservation of my life, I could not help discharging my piece at the animal's head, and by the sudden plunge he made into the water, and the appearance of blood on the surface as he was swimming towards the opposite shore, it seemed that one or both of the shots had penetrated his eye or throat. We saw him reach the shore and crawl through the mud into the jungle.

Part of the flesh of the crocodile or kayman is good and wholesome when well cooked. It tastes somewhat like pork, for which I took it, and ate it with much relish when I first come to Nancowry; till, on inquiry, finding it to be the flesh of a beast so disgusting and horrible in its appearance and habits, I felt a loathing, which I could never overcome; but it is eaten by both Natives and Europeans.

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Letter V.

The natives of these islands are a free people, perfectly independent, but have a captain in every village. There are, indeed, several who claim the rank of captain, as being more sensible and clever than their neighbours, but only one of the number is considered as the *Omjah karru*, or the great master of the house. Yet no one is bound to obey him, for all of them, male and female, consider themselves under no control whatever; and the captain must take care that he does not offend by pretending to command. He is sure to be disobeyed, unless they are pleased to listen to friendly representation. All the preference given him consists in this, that when a ship arrives, he is allowed to go first on board, and to make the bargain if they have anything to barter. They are commonly good-natured men, disposed to make and preserve peace among the common people. In every other respect they live and act like the rest, get drunk, commit fornication, and, when there is, as they say, a necessity for it, murder; and are equally lazy and unclean. But they can use their tongues more glibly than their neighbours.

Their houses are generally spacious, and built upon pillars six or more feet from the ground, resembling those of the Malays, but round, not square, like the latter. The inhabitants ascend by a ladder, which they can draw up after them. The house has only one room, but generally contains more than one family. Parents and children, guests young and old, of every description, pig here together lying naked on the floor, with nothing but a *hetfat*, the leaf of a species of palm, under them, in lieu of a mattrass, and very few have any covering. The furniture of such a house consists in a few pots made by the women, some highly polished cocoanut dishes to hold water, some hatchets, a sabre or two, a few sailors' knives, and a good many spears. A family generally possesses two or three *palongs* or boats.

Their chief food is mellori bread, made of the fruit of a kind of palm-tree,* which is very palatable; yams, several other good roots, and great plenty of fruit from various trees and shrubs, all which grow in great abundance. Of pigs and common fowls they have a vast profusion. These are fed with cocoanuts, and their flesh is remarkably good. The sea furnishes them with various kinds of fishes, and an abundance of crabs and other shell-fish, so that they may easily enough serve their god, which is their belly.

The clothing of the men consists of a narrow piece of cloth about three yards long. This they wrap twice round their waist, then passing it between their legs, and through the girth behind, leave the end of it to drag after them.† The women wear a piece of cloth, commonly of a blue color, about a foot wide, fastened round their waist, so as to hang down like an apron, reaching not quite to their knees. They pride themselves upon their fine skin, which indeed they keep very clean, and do not in general use any paint. Both sexes live from their infancy without any restraint, and commit every kind of abomination, often to the utter ruin of their health and constitutions, in very early life. In general they do not live regularly in the married state, till they are past their prime; though I have known some who had married early remain faithful to each other, and keep their families in good order.

As savages, they may be justly esteemed a good-natured race, being always ready to do a kind action to their friends, of which I will relate one instance. We used to buy of them what we wanted, and pay with tobacco, the current medium. Even when they had nothing to sell, they would come and fetch their portion of tobacco, which we never refused them, as long as we had any, till, by the non-arrival of the ship, we were left entirely without it. We therefore told the captain of the village that, as we had no more tobacco, the people need not bring us any more provisions, for we had nothing to give in exchange. The captain did as we desired, yet, on the very next day, we were supplied more plentifully then ever with the things we wanted. They would not even wait for pay, but hung up their fruit and meat about the house and went away. We called after them and told them how we were situated. Their answer was, "When you had plenty of tobacco, you gave us as much as you could spare; now, though you have got no more of it, we have provisions enough, and you shall have as much as you want as long as we have any, till you get more tobacco." This promise they most faithfully performed. Such kindness we did not expect from such people; but they always showed great affection for us.

As to religion, they are in a state of deplorable ignorance. Their notions of a Divine Being seem most oddly perplexed, insomuch that it is difficult to make out anything among them like a fixed opinion of His existence and attributes, nor do they seem to possess any curiosity to know more about Him.

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* A species of *Pandanus*. See *Asiatic Researches*, Vol. III, p. 292.

† Hence the fabulous stories of men with tails, related by Kioping, a Swedish navigator.

But they are not professed idolaters, like most of the other Oriental nations. They have not even a word in their language to express their idea of God. They use the word *Knallen* when they speak of Him, but it only signifies, "above, on high": for instance, they say *Knallen maade*, "on the hill"; *Knallen uniga*, "on the top of the tree"; *Knallen gamalee*, "on the surface of the sea," speaking of something swimming. However, they believe that this "unknown God" is good, and will not hurt them; but wherein His goodness consists, they neither have, nor seem to wish to have, any understanding, nor ever trouble themselves about Him. Therefore, when we endeavoured, as well as we could, to explain to them the goodness of God, in pitying the lost condition of man, and providing the means of our redemption, and spoke to them of Jesus Christ our Saviour, and of what He has done and suffered to purchase for us salvation, they heard us indeed with astonishment and silent submission; but that they should be at all interested in it, and become virtuous and happy if they believed and turned to Him, and after this life enter into everlasting bliss by His merits, was more than they could possibly comprehend. When we told them that we were come hither for no other purpose, but to make them acquainted with their Creator and Redeemer, and to bring them the glad tidings of salvation; and begged them only to take it to heart, and reflect upon what we thus made known to them in the name of God, they laughed at us. They observed, that they could not believe that the sufferings of one man could atone for the sins of another; and that, therefore, if they were wicked, what we told them of a crucified Saviour would not help them; but they insisted that they were good by nature, and never did any thing wrong, as we well knew. When we replied, that we knew that they had but lately murdered some people, and afterwards abused the dead bodies, each thrusting his spear into them, mutilating them in the most wanton manner, and at last cutting them to pieces, and asked them whether this was a proof of their natural goodness, their answer was—"That you do not understand; those were people not fit to live, they were *gomoy*, 'cannibals'!"

Letter VI.

The inhabitants of the Nicobar Islands believe that all dangerous diseases proceed from the devil, who is nevertheless under the control of their sorcerers or *Paters*.* If, therefore, these men cannot cure a disorder by their tricks and enchantments, by which they pretend to catch the devil and drive him off the place, they are sure that he has entered into some man or woman sitting, in his or her house, and by witchcraft, sucking all the power of healing out of the patient's body. The sorcerer then proceeds to discover the witch, and finds no difficulty in fixing upon some one he hates. The word of such a wise man is, of course, taken by all for the voice of truth, and the poor person accused is murdered without further inquiry. Murders of this kind occurred but seldom in our neighbourhood, but were said to be more frequent in

* An appellation borrowed from the Portuguese Missionaries.

some of the other islands. We told them that the devil everywhere proved himself the father of lies, and a murderer from the beginning; and, till they turned to the true God, they were satan's slaves, and his works they must do. They seem indeed to be continually engaged with him whenever they profess to perform any religious rite. They even ascribe the creation of the world to the *Eewee* or wicked agent. If they do anything wrong, or commit any atrocious crime, and are reproved for it, they immediately answer—"It was not me, it was the devil that did it." If you convince them that they did it themselves, and with their own hands, their usual phrase is, "the *Eewee* did not make me perfect, or better"; and therefore they cannot help sometimes doing what is wrong. They speak of a great many sorts of devils, but all malicious and disposed to hurt them, if they had not such great and powerful paters among them, who had a superior power, and could catch and bring them into subjection. It is not difficult for the sorcerers thus to impose upon the poor ignorant people, for they really do possess superior cunning and astonishing dexterity, being the most expert jugglers on earth. Every one who has visited the East Indies, well knows with what unaccountable exhibitions and sleight-of-hand tricks the jugglers endeavour to amuse the people; but in the Nicobar Islands, these arts being applied to what they consider as religious exercises, the deception is so great, that I have myself often stood astonished, being unable to account for what I saw.

I went once purposely into a house where a sorcerer was about to perform as doctor, and to cure a woman who lay very ill. I was determined to watch him as narrowly as possible. Both doctor and patient were stark naked. After a series of most horrible grimaces, the sorcerer produced a very large yam, which he held up, pretending that he had *limpt* it (for thus they call this species of legerdemain) out of the body of the woman, and that it had been, by witchcraft, the cause of her disorder. When he entered, I particularly noticed that he had nothing in his hands or about him, nor did there appear any possibility of a substance of that size being concealed in the empty room. At another time I saw a sorcerer, under similar circumstances, on a sudden exhibit three large stones, which he pretended to have extracted from the patient's body. To the first of these patients he afterwards administered a decoction of herbs, and she recovered. The cure was probably owing to his skill in preparing the potion, but was of course ascribed to the incantation and the seizure of the enchanted yam.

After I had resided five years in the island, my legs began to inflame and swell to a prodigious size.* A suppuration took place, and, till the discharge commenced, I suffered excruciating pain. During this dreadful illness several paters called upon me, and in the most friendly manner expressed their pity, offering me their assistance, and assuring me that if I would submit to their mode of cure, I should soon recover. At last I thought that, as their skill in various medicinal arts, and their knowledge of drugs was very great, I would suffer

* A disorder known in India by the name of the Cochin leg. *Asiatic Researches* Vol. III.

one of them, called Philip, who always attended us as language-master, to try what he could do for me, on condition that he should omit all superstitious ceremonies. He agreed, and immediately putting on the most solemn and significant expression of face, worthy of so eminent a practitioner, began to paw me all over, varying his features with every motion of his hand, so that, notwithstanding the pain I felt, I could not refrain from bursting into laughter at his grimaces, which he could not possibly avoid, though bargained to be omitted. At length, the preamble concluded, he began his work, first by stroking my legs from the knees downwards with the palm of his hand, muttering all the while, and then by applying his mouth and sucking the parts affected, accompanying the operation by a most strange kind of purring or grunting. Thus far his practice seemed to do good, and I felt relief, when, rising on a sudden, he produced a potsherd, which he exhibited to the company as having *limpt* it out of my leg, saying that he should soon bring forth more pieces. I cried out—"Stop there you deceiver, do you pretend that my body is full of potsherds; that broken piece in your hand you drew out of your own mouth. Open it directly, and let us have the rest." He stood confounded, and soon sneaked out of the house, laughed at by all his former admirers, nor did he call upon me again till about a fortnight after.

As it sometimes happened, that when the skill of the sorcerers proved ineffective, a Missionary had administered some simple medicine, which, by God's blessing, had the desired effect, they looked upon us as the first of paters, though our medicines consisted in nothing but a little magnesia, spirits of nitre, and a few simples. But what astonished them most was this, that we could inform them beforehand, by means of a perpetual almanac, that an eclipse of the sun or moon would take place on the very day when it happened. Their notion of the cause of an eclipse is the most preposterous and ridiculous that ever entered into the head even of an heathen. They say that the devil is come to devour the sun or moon, and falls to work to gnaw off the edge; that, therefore, it is necessary he should be driven away; consequently all the sorcerers or paters assemble, and amidst singular and hideous grimaces, throw up their spears towards the luminary attacked, all the villagers sounding their gong-gongs with the greatest violence, to frighten away the voracious invader. After some time their efforts succeed, and he must betake himself to flight without effecting his purpose. Though we endeavoured in every possible way to explain to them how an eclipse was occasioned, and they seemed in some degree to comprehend it, they only declared us to be the greatest paters that had ever been on the island, but ascribed the deliverance of the sun or moon from the fangs of the devil, solely to the skill and power of their sorcerers, and all we could say to prevail upon them for once to be quiet, and observe how the luminary would regain its former appearance, by those means which God, the Creator Himself, had ordained, was in vain.

The expulsion of the devil from a sick person or family is a ceremony as singular as it is silly, but as I have frequently been a spectator of this farcical performance, a description of it may not be uninteresting to you. I have before observed that, if their medicines

(many of which are very powerful), or, as they will have it, their incantations are of no avail, they then ascribe the illness to the immediate agency of the infernal spirit, who must be subdued and caught. The pater, previous to the commencement of his operations, summons all the young men in the village to assist him in constructing a small raft of light wood. Three poles are fixed upon it to represent masts, and some bamboos laid across like oars. The masts are hung with young white cocoa leaves. This toy, which they call *Hanmai*, they place between two palongs, each rowed by a crew of stout young men, with a piece of rattan as a towing-rope fixed to it. Every rower carries five spears besides his oar. They now wait with great eagerness for the pater's further orders. He has meanwhile begun his work, which he finds either hard or easy of performance, according as the patients are rich or poor. He is stark naked, and painted all over with various colors, making as terrific an appearance as possible to frighten the devil, and indeed it is enough to terrify any man to see him brandishing a short clumsy bludgeon which he holds up with both hands, and dancing in the most furious manner. He accompanies his gesticulations with the most horrible yells and howlings, and at length is fortunate enough to seize the enemy by a leg, an arm, or even by the hair of his head, which the poor deluded people believe, without seeing what he grasps. Now the whole company rush towards the water, and the pater deposits the supposed devil on board the raft, on which the palongs row off with the greatest possible expedition, dragging the captive out to sea to a considerable distance, when, having turned him and his vehicle adrift, they row back with the utmost speed to shore. For two days the enemy may survive this rough usage, and again land in safety, if driven on shore by the tide or wind, but on the third day he must die. Should he land at another village, he then does the mischief there, which he was prevented doing at the former place.

The worst consequence of such an unfortunate conclusion of the business is, that the greatest enmity immediately takes place between the two villages, and nothing can atone for the aggression but a formal combat. The village invaded sends a challenge to the former, and a day is fixed for the battle. The captains of all the neighbouring villages having met to a consultation, the combatants are chosen, and as there are others who wish to take advantage of so just a mode of settling their disputes, they are summoned to appear. One has stolen something, another run of with his neighbour's wife, and the like. All these people now meet, both the injured and the guilty, and each being provided with a sufficient supply of long sticks of the mango (*? mangosteen*) tree, they proceed to the place of rendezvous. There the captains examine the sticks, and those that are too thick are thrown away. This being done, two of the combatants step out, and lay about each other's back and head, till one of the party is obliged to give up. A second couple follow, and after them others, till in a proper space of time the whole company has got a good drubbing. The most innocent among them are generally the worst handled; however, the business is now decided, and all are convinced that whoever was first obliged to give up, was the offender.

Peace is thus restored, both parties being perfectly satisfied with so wise and just a decision, nor could anything we said convince them of the folly and wickedness of such superstitious and injurious practices.

Letter VII.

You wish to know what were the chief external causes of the failure of our exertions; and ask, whether our residence on the island had been with the consent of the natives, or whether they considered us as intruders. The latter circumstance was guarded against by a regular treaty made in December 1774, between the Brethren and the captain and inhabitants of the village Malacca, near to which they had made their settlement. They then obtained legal possession of that piece of land which they occupied. Such presents as the natives required were delivered, and the terms contained in the treaty fully explained to them; after which the principal men signed their names, by drawing a pen with ink over the letters as written with a pencil. The neighbouring village likewise received a proper consideration for a treaty of friendship with them, and now the Brethren were looked upon no longer as *Kaleng*, "foreigners," but as *Baju Tripjet*, "natives at Tripjet." Objections were, however, started when they began to build their dwelling-house, and some wicked people endeavoured to raise suspicions in the minds of their countrymen as to the intentions of the Missionaries. The latter were, for some time after, in danger of their lives, from the fickle disposition of their new friends; but the Lord preserved them. Their upright intentions were at length acknowledged, and ever after all due respect and confidence shown to them by all the inhabitants of Nancowry.

The failure of the mission was owing to other causes, of which I will mention some according to my view of the subject. *First*, the extreme difficulty of learning the language. We had indeed an opportunity of speaking with some of the natives in a kind of bastard Portuguese, but it would by no means answer the purpose of preaching the gospel to them in general. It was their own native language of which we wished to acquire a sufficient knowledge, thereby to gain access to the whole nation. To this end, a pater called Philip was engaged as language-master. A few of the Missionaries made some proficiency, notwithstanding the peculiar difficulties attending the study; for impediments arise even from the habits of the natives. Their language is in itself very poor in words and expressions, and they are of so indolent a turn, that even talking seems a trouble to them; and as long as they can express by signs what they mean, they are unwilling to open their mouths. If a stranger comes into their houses, they sit still and look at him, or, perhaps, pointing to some food, motion to him to sit down and eat. There he may sit for hours without hearing a syllable spoken, unless he can himself begin, when they will answer with friendliness. Again, both men and women have always a huge quid of the betel or areca-nut in their mouths, which renders their speech so indistinct, that

if you ask them the names of the various objects before them, you can hardly distinguish between the sputtering sounds they make. Often were we obliged to tell pater Philip to take his quid out of his mouth that we might hear what he attempted to articulate. As to books and vocabularies we found none, nor could we make any while our knowledge of the language was so imperfect.

Secondly, the unhealthiness of the climate, by which most of the Missionaries were carried off before they could learn the language, or just when they had got so far that they were able to speak to the natives. During the comparatively short period of the existence of the mission, eleven worthy Missionaries found their graves in Nancowry, and thirteen more, shortly after their return to Tranquebar, in consequence of the malignant fevers and obstructions in the liver contracted in the island. These dreadful disorders, and the seasoning fevers which every new comer must suffer, are all accompanied with such pain in the head, dejection of spirits, and constant sickness, that the senses are in a degree stupified, and learning rendered doubly difficult. The mind being likewise filled with desponding views of the possibility of relief and of future usefulness, the effect is very unfavorable to that persevering diligence with which such a barbarous language must be studied; and death snatching away so soon those who had made some small progress, their successors must begin the uphill work again and again, and the prospect of obtaining the aim of the mission is put off from one period to another.

Thirdly, our mode of life, and too great exertion in clearning and planting, and other laborious work which necessity obliged us to undertake, was likewise a principal cause of the prevalence of various disorders and complaints of the liver, the region of the stomach swelling and becoming quite hard below the ribs. All who were thus affected, died either in the island, or soon after their return to Tranquebar. I was not seized in this manner; but, besides other illnesses, got a quartan-ague, of which I have not lost the symptoms to this day. When I mentioned it in a letter to Dr. Betschler at Tranquebar he wrote in answer,—"Ah! my friend, if you have got the Nicobar-ague, it will keep you company all your life, if you live to be an hundred years old." Thus far his words have proved true, and to this present time, after thirty years have elapsed, I perceive the remaining symptoms regularly returning every fourth night. While I was at Nancowry they were very violent, and weakened me so much, that I often thought my life in danger. After my return to Europe they abated considerably; but on being appointed to the service of the missions in the Danish West India islands, the heat of the climate caused them to increase in strength, though by degrees they again became bearable, and the fever almost imperceptible. At present the symptoms are various, sometimes a great degree of thirst, sleepless nights, and uneasy sensations; at other times heavy yet restless sleep, with dreams approaching to delirium; but whatever they are, never failing to recur every fourth night regularly. I will

not venture to say whether, if I had stayed in Europe, the use of proper means, under skilful treatment, might not have entirely removed the complaint, but the fact, as it exists at present, has verified Dr. Betschler's prediction.

To return to the former subject, I must add that not one of us ever learnt the Nicobar language so perfectly as to be able clearly to explain the will of God concerning our salvation to the natives. But I am of opinion that they are not the most hopeless subjects, and think that the gospel might be preached to them with success, if the above-mentioned obstacles were removed.

Letter VIII.

The birds' nests, which I have described in a former letter, brought a great number, both of Malays and Chinese, to our coasts in quest of them. These people always created much confusion and quarrelling among our otherwise-peaceable islanders by their knavery and frequent assassinations; and also gave the Missionaries a great deal of trouble. In general fifteen or sixteen, and in one year nineteen large prows full of these vagabonds came to Nancowry. After the officers and soldiers who had accompanied the Missionaries to this island were all dead, and it was known that the latter would not quit their post, the Government at Tranquebar required that always one of them should be appointed Danish Royal Resident, and hold as it were the presidency of the islands. The patent was always signed by the King. Brother Voelcker was the first who filled that station, and was succeeded by Brother Armedinger. He was followed by Brother Blaschke, and after his return to Tranquebar I was appointed. As I thought it was left to my own option whether I would accept of it or not, I declined it in a letter to the Governor of Tranquebar, conceiving it to be inconsistent with the duties of a Missionary. However, I was obliged at length to yield, and became Resident. I was succeeded by Brother J. Heinrich, and Brother Soerensen was the last.

I will add an instance or two to show how this office proved frequently a source of much vexation to us. The Danes, when they formed their first settlement in Car-Nicobar, an island 75 English miles in circumference, to which they gave the name of New Denmark, had conveyed a considerable number of cannon thither; but after the death of all the soldiers, the carriages rotted, and I saw seventeen of these guns lying on the ground. By one or more at a time the Malays kept stealing them away. It happened, however, that a Nacata, or general of the King of Queda as he styled himself, arrived at Nancowry with a large prow, and being informed by the natives that he had no less than five of them on board, I thought it my duty,

as Resident, to protest against this theft, and spoke to him about it. He flew into a great rage, and began to use threatening language, pleading the orders of his king. I answered that his king very well knew that, as he had laid nothing down there, he had no right to take anything up; and that if he persisted, I should give notice to the King of Denmark. I then left him, but heard that he afterwards threatened soon to prevent my reporting his conduct, adding, that when I was dead I should be quiet enough. The natives also assured me that it was his intention to kill me, but that they would stay with me for my defence. I replied that though I thanked them for their kindness, yet they, as well as we, were much too weak to withstand the diabolical influence which actuated these murderous people; every inclination to commit that and other crimes being of the devil; but that our hope and trust was in God. They heard us with attention and surprise, and stayed with us till late at night, when we desired them to return home, but could hardly prevail upon them to leave us.

As soon as they were gone, having performed our usual evening devotions, we were preparing to retire to bed, when we heard a noise without, and immediately after a violent knocking at the door. On opening it, I was not a little alarmed to see a great number of Malays surrounding the entrance. I cried silently to the Lord to protect us against their evil designs; but though my fears were great, I assumed an authoritative air, keeping my station in the door-way, as if determined not to let them enter. The foremost, however, pushed in, and now the Nacata himself came up. He treacherously held out his hand; but on my offering him mine, he grasped it firmly, and dragged me with him into the house. The Malays immediately filled all the chairs, and I stood before them. I had no other hope but in the mercy of God, to whom I sighed for help in this trying moment. Meanwhile, more of them crowded into the room, and sat down on the floor, closely watching me, armed with their *creeses* or daggers. Though I preserved a firm and undaunted appearance, I cannot describe my feelings, for I expected to be immediately sacrificed to their fury. The Nacata addressed me by saying that he was come hither to ask whose property the cannon were to be, his or mine? I answered, "that he came to the wrong person to make that inquiry; for I was only a servant of the King of Denmark, as he, according to his own account, was only the servant of the King of Queda. Neither of us, therefore, could determine who was to have the cannon. Our respective masters, and they only were able to settle that point. He had told me that he had received orders to fetch them, and I could assure him that I had orders to protest against it: we both, therefore, had only done our duty. All now depended upon this point, whether my king or his king had any right to give orders in these islands, and to claim the property in question." At this answer he became quite furious, and began to talk about the ease with which the Malays might murder us all. Some of them even drew their daggers, and showed how they were tipped with poison. They looked indeed more like a host of devils than a company of human creatures. On a

sudden they all jumped up and seemed to rush upon me. I commended my soul to the Lord, and called upon Him for deliverance, awaiting the issue in silence, when, to my surprise, they quitted the room one by one, and left me standing alone in astonishment at their conduct. I shall never forget the dreadful scene, and think of it at this moment with shuddering. As soon as they were all gone, and I found myself in safety, I fell on my knees, and with tears, gave thanks to God, who had heard my prayers, and rescued me out of the hands of the savages. My Brethren, who had very properly retired into the wood when the Malays first burst into the house, now returned, and we wept for joy to see each other alive.

Having somewhat recovered from our fright, I went to the village, and told our old Nicobar captain, Jan, what had happened, upon which he sent messages to all the neighbouring villages, when, in a short time, great numbers arrived well armed, and watched at the landing-place all night. Had the Malays offered to return to shore, not one of them would have escaped with his life.

In the morning, the Nacata's prow with two others were seen at anchor under Trincuttee, many miles from hence. The people there told us afterwards that the Nacata had said that the Danish Resident at Nancowry was a very great sorcerer, for he had tied their hands, and they could do nothing with him. It was not I who tied their hands, but God, who heard the cries of a poor, defenceless, and trembling child, trusting alone to His mercy and power.

I might add many other instances of the trouble and mischief occasioned by the visits of these robbers, and which it was my business to prevent if possible; but will close my account with relating only one more, to show in what manner they treat even their own countrymen, and also, how willing our neighbours were to defend our rights.

Having this year obtained, by foul or fair means, a pretty considerable booty, no less than nineteen prows full of Malays came the ensuing season into our roads for birds' nests. I had, however, got the start of them. As soon as the N. E. wind commenced, I went to the southern islands, where I stayed a month, and not only collected a vast quantity of nests, but purchased all those which the natives brought for sale. The Malays, therefore, were disappointed, and got but few. We expected that they would have been thereby discouraged, and discontinued their visits. But we were mistaken. While I was at *Manjoul*, a small island E. of the channel of St. George, a prow with about sixty Malays arrived there, commanded by a Nacata, who called himself Sayet Ismael, a priest of the King of Queda. He was the most civil and well-behaved Malay I ever conversed with. I advised him therefore to stay where he was, to make a regular agreement with the natives about the price of the birds' nests, pay faithfully, and keep good order among his men, so as to prevent

all cause of complaint, and assured him that thus he would get a good cargo. He took my advice, and procured a considerable quantity of nests, while those who followed him got none.

Among the latter was a man who styled himself a Prince of Queda, and had two Nacatas, some women, and a numerous crew on board his large prow. He committed everywhere the grossest acts of barbarity, and in Car-Nicobar murdered two persons, of which I was soon informed. Shortly after he came into our neighbourhood, and anchored under Tricut, where he seized upon Sayet Ismael's prow. The latter having sent his palong to Nancowry, with eight sacks of rice, two of nests, and other goods, soon followed, claiming our protection. Thus, though we ourselves were in a defenceless state, the oppressed came and sought help from us. We suffered the priest to occupy one of our negroe-houses, where he remained very quiet. Meanwhile the Prince heard that we had obtained a large quantity of nests, and thought it would be no difficult matter to plunder us likewise. For this purpose he arrived with two large prows filled with some of the most ferocious of the Malay race. They entered, occupied our house without any ceremony, and seemed to be a determined set of banditti. I was alone in the midst of them, and cried to the Lord to take me under his protection. While I was walking to and fro across the room, the Prince inquired whether I had any birds' nests. I replied in the affirmative; upon which he pretended that he was come to purchase them of me, and wished to see them. As I happened, during this conversation, to step towards the door, one of our Caffre servants, who stood near it, thought I had made a sign to him to call the natives to my assistance, though, in fact, I was so much agitated, that I had not even observed him. He ran immediately into the village Malacca, and called the people together. Meanwhile I spoke in a decisive tone with the Prince, forgot all his grand titles, and assured him that he should not get a single nest from me, sharply reproving him for having murdered two men at Car-Nicobar, who were under the protection of my sovereign. He flew into a passion, saying that he would soon show me that he had it in his power to sieze all my birds' nests, and as to the two men who had been stabbed at Car-Nicobar, he was not bound to answer for that deed to me.

He had scarcely finished this insulting speech, when a party of natives unexpectedly leaped in at the windows, with drawn sabres in their hands. The Malays, terrified beyond measure, asked what all this meant. I replied—"They come to prevent your committing more murders." In a short time the house was surrounded by the natives, both men and women being armed with sabres, spears, and bludgeons, their number continually increasing. The Prince and his men now began to beg that we would take them under our protection. At first I gave them no answer, but continued reproving them for their base and treacherous practices, among which I particularly noticed their plundering people of their own nation. I asked—"Who therefore can trust to your word? You deserve punishment at the

hands of those you have so often provoked by your injustice, and if I were now only to lift up my hand, not a man of you would escape." Being convinced that they were in my power, they began to entreat me to interfere in their behalf, and the Prince offered to restore all he had taken. "How can you," said I, "restore the lives of those you have murdered? However, you shall for once keep your word, and restore the prow you took from Sayet Ismael, with its whole lading." This he readily agreed to, and having called Sayet Ismael, I made the Prince repeat his promise, and asked Sayet whether he could trust him, which, after some words had passed between them in their own language, he assured me he could, and they shook hands in token of sincerity. I now informed the Prince that his men might go unmolested to their palongs, but that he himself should stay with me till Sayet Ismael's prow had been sent hither and delivered up to him. He was exceedingly terrified at this sentence, and said that, unless he was permitted to accompany his people, the natives would certainly kill him. At length Sayet Ismael himself warmly interceding for him, I consented that they should go away together, and went out to pacify the natives. It was with some difficulty that I succeeded in appeasing their indignation against these robbers, whom they now had in their power, but when I told them that I should look upon their compliance as a proof of their regard for me and my Brethren, they were satisfied, and made, of their own accord, a passage through their ranks for the Malays. Their appearance was indeed formidable as they stood on each side armed with their spears and bludgeons. The Malays, however, were still afraid to leave the house, till, after much entreaty, I myself agreed to accompany them to their palongs. The Prince seized my hand, and would not let me go till he had got into the boat.

I thought it my duty to avail myself of this opportunity to impress these ferocious invaders of our islands with some sense of the danger they were in, and to teach them that they might not always be permitted to commit their depredations with impunity. For a time I believe it had a good effect; but I confess that I felt not a little intimidated by this unpleasant visit, and much regretted the necessity of holding the office, and doing the duty of a Resident or Agent of Government. God was my refuge, and had He not granted me presence of mind, sufficient to avoid all show of the fear I felt, we should probably have fallen a sacrifice to the revengeful and murderous spirit of these barbarians.

Sayet Ismael returned to us that very night with his recovered prow and cargo, thankful for the justice which he had obtained, and as he offered us his services, we entrusted him with a parcel of letters to our Brethren in Europe, which we found he had regularly forwarded, as they all came safe to hand.

The Prince had talked of nothing on the way to Tricut, but of the wonderful power of the Missionaries, and declared that he would certainly never again set foot on Nancowry.

FROM THE "LETTRES EDIFIANTES ET CURIEUSES," TOULOUSE; 1810.

Extract from a letter from Père Faure, S. J., to Père de la Boësse, S. J., dated 17th January 1711. *Vol. XI.*

Ces îles sont situées à l'entrée du grand golfe de Bengale, vis-à-vis l'une des embouchures du détroit de Malaca. Elles s'étendent depuis le septième degré jusques vers le dixième de latitude Nord. La principale de ces îles s'appelle *Nicobar*, et elle donne son nom à toutes les autres, quoiqu'elles aient outre cela un nom particulier. Comme c'est à celle-là que vont mouiller les vaisseaux des Indes, et que les peuples qui l'habitent paraissent plus traitables que ceux des autres îles, nous avons jugé à propos d'y faire notre premier établissement.

Voici ce que j'ai appris de ces îles sur le rapport de ceux qui en ont quelque connaissance.

L'île de *Nicobar* n'est éloignée d'*Aohen* que de trentes lieues. Son terroir, de même que celui des autres îles, est assez fertile en diverses sortes de fruits: mais il n'y croît ni blé, ni riz, ni aucune autre sorte de grain; on s'y nourrit de fruits, de poissons et de racines fort insipides appelées *ignames*. Il y a pourtant des poules et des cochons en assez grande quantité: mais ces Insulaires n'en mangent point; ils les échangent, lorsque quelque vaisseau passe, pour du fer, du tabac et de la toile: ils vendent de la même manière leurs fruits, et leurs perroquets qui sont fort estimés dans l'Inde, parce qu'il n'y en a point qui parlent si distinctement. On y trouve encore de l'ambre et de l'étain, et c'est à quoi se terminent toutes leurs richesses.

Tout ce que j'ai pu connaître de la Religion des Nicobarins, c'est qu'ils adorent la Lune, et qu'ils craignent fort les Démons dont ils ont quelque grossière idée. Ils ne sont point divisés en diverses castes ou tribus, comme les peuples de Malabar et de Coromandel. Les Mahométans même n'ont pu y pénétrer, bien qu'ils se soient répandus si aisément dans toute l'Inde, au grand préjudice du Christianisme. On n'y voit aucun monument public qui soit consacré à un culte religieux. Il y a seulement quelques grottes creusées dans les rochers, pour lesquelles ces insulaires ont une grande vénération, et où ils n'osent entrer de peur d'y être maltraités du Démon.

Je ne vous dirai rien des mœurs, de la police et du gouvernement des Nicobarins, car personne n'a pénétré assez avant dans leur pays, pour en être bien instruit. Si je suis assez heureux pour en être écouté, et pour leur faire goûter les vérités que je vais leur prêcher, j'aurai soin de vous informer exactement de tout ce qui les regarde.

Lorsque j'arrivai à Pondichery, on pensait sérieusement aux moyens de travailler à la conversion de ces insulaires. Mais comme on ne voulait pas ôter à la Mission de *Carnate*, ni à celle de *Maduré*, les ouvriers qui y étaient nécessaires, on attendait de nouveaux secours pour cette entreprise. L'ayant su, je m'offris aux Superieurs, je les pressai même, et ils

se rendirent à mes instances. J'eus donc le bonheur d'être choisi avec le Père Bonnet pour mettre la première main à une si bonne œuvre, dès qu'il se trouverait une occasion de passer à ces îles.

Nous attendions avec impatience que quelques vaisseaux fissent voile vers le détroit de Malaca, lorsque tout-à-coup on en vit mouiller quatre, dont deux étaient destinés à aller croiser dans ce détroit. Cette petite escadre était commandée par M. Raoul, à qui nous fîmes l'ouverture de notre dessein. Il l'approuva, et nous accorda avec bonté la grâce que nous lui demandions, de nous recevoir dans quelqu'un de ses vaisseaux. J'entrai en qualité d'Aumônier dans le *Lys-Brillac*, que commandait M. du Demaine. M. Raoul voulut avoir le Père Bonnet avec lui dans le *Maurepas*.

Après deux mois employés en diverses courses qu'il est inutile de rapporter, nous mîmes à la voile pour repasser devant Malaca, et doubler un cap appelé *Rachado*. Nous serons bientôt à la vue des îles *Nicobar*, où j'espère, avec la grâce du Seigneur, m'employer tout entier à la conversion de ce pauvre peuple qui m'est échu en partage. Dieu, qui a toujours usé envers moi de ses grandes miséricordes, m'inspire une pleine confiance en sa toute-puissante protection ; et c'est ce qui me fait envisager sans crainte les périls que nous allons courir au milieu d'une nation barbare.

Que je serais heureux, mon Révérend Père, si, quand vous recevrez ma lettre, j'avais déjà été digne de souffrir quelque chose pour Jésus-Christ ! mais vous me connaissez trop bien, pour n'être pas persuadé qu'une pareille grâce est réservée à d'autres qui la méritent mieux que moi. Quoi qu'il en soit de mon sort à venir, vous apprendrez l'an prochain de mes nouvelles, ou par mes propres lettres, si je suis encore en vie, ou par les lettres de nos Pères de Pondichery, si je ne suis plus en état de vous écrire moi-même. Je suis avec respect dans l'union de vos saints sacrifices, etc.

Voici ce qu'on a appris depuis le débarquement des deux Missionnaires dans les îles de *Nicobar*. Au retour du détroit de *Malaca*, les deux vaisseaux passèrent par sept degrés de la ligne, à la vue d'une des îles que M. du Demaine alla ranger. Il fit aussitôt équiper sa chaloupe pour mettre les Pères à bord de cette île. La séparation ne se put faire sans beaucoup de larmes. Tout l'équipage fut attendri de voir avec quelle joie les deux Missionnaires allaient se livrer à la merci d'un peuple féroce, dans des îles si peu pratiquées et tout-à-fait dépourvues des choses nécessaires à la vie. Le vaisseau mit en panne, et tout le monde conduisit des yeux la chaloupe qui côtoya l'île fort long-temps, sans pouvoir trouver d'endroit où débarquer, en sorte même que l'officier qui commandait la chaloupe songeait déjà à retourner à son vaisseau. Les Pères le conjurèrent avec instance de ne point perdre courage ; ils côtoyèrent donc l'île encore quelque temps ; et enfin on trouva un lieu assez commode, où l'on fit débarquer les Missionnaires, avec un petit coffre où était leur chapelle, et un sac de riz dont M. du Demaine leur avait présenté. Aussitôt qu'ils se virent dans l'île, ils se mirent à genoux, firent leur prière et baisèrent

la terre avec respect, pour en prendre possession au nom de Jésus-Christ. Ensuite, après avoir caché leur chapelle et leur sac de riz, ils s'enforcèrent dans les bois, pour y aller chercher les insulaires. Nous n'apprendrons quel aura été leur sort, que par les premiers vaisseaux qui passeront par-là. On a su seulement ces particularités de M. du Demaine, qui a ajouté qu'avant que de débarquer les Missionnaires, il avait aperçu un de ces barbares, les flèches en main, qui, après les avoir regardés fièrement, et assez long-temps, s'était ensuite retiré dans le fond du bois.

NOTE.

Ce fut dans la grande île Nicobare appelée Chambolan, la plus près d'Achen, que débarquèrent d'abord les deux Missionnaires. Ils employèrent environ deux ans et demi à y prêcher l'Evangile ; mais on ne peut pas dire au juste quel fut le fruit de leurs prédications.

De là ils passèrent aux autres îles, et principalement à celle qui s'appelle Nicobary, laquelle est située par les huit degrés trente minutes de latitude Nord. Ces insulaires sont doux, affables et beaucoup plus traitables que les peuples des îles voisines. Pendant dix mois de séjour que les Missionnaires firent dans cette île, ils y donnèrent une si haute idée de leur vertu que les habitans ne les virent partir qu'avec un regret extrême. Ces pauvres gens représentèrent inutilement aux deux Pères le risque qu'ils allaient courir de leur vie en s'abandonnant à des peuples féroces et inhumains. Ils ne purent rien gagner sur leur esprit, et ils furent contraints, pour ne leur pas déplaire, de les conduire contre leur gré à Chambolan, ou à quelqu'autre île voisine, car on n'a pas pu vérifier ce fait.

Les Missionnaires y furent à peine quinze jours qu'ils y finirent leur vie, sans doute par une mort voilente et cruelle, comme l'ont reproché dès-lors, et comme le reprochent encore aujourd'hui, les habitans de Nicobary à ceux de Chambolan, et coux-ci ne s'en défendent que par de mauvaises défaites.

Il semble même que l'image de leur crime est toujours présente à leurs yeux : la frayeur les saisit à la vue du pavillon blanc, lorsqu'un de nos brigantins parut dans le canal de Saint Georges qui passe auprès de cette île. Ils furent même plus d'une heure sans vouloir donner à bord, criant de leurs pirogues et priant en mauvais Portugais qu'on ne leur fît point de mal.

Nos gens qui ne savaient point encore ce qu'ils apprirent depuis dans les îles voisines, n'eurent pas de peine à leur promettre une sûreté entière ; mais la contenance de ces barbares, lorsqu'on leur demanda des nouvelles des Missionnaires, fit juger que ces Pères avaient été massacrés. Le chef des Indiens répondit en tremblant qu'il n'en avait nulle connaissance, un autre le tira par le bras ; tous parurent déconcertés et consternés.

C'est ainsi que nos Français vers 1715 quittèrent l'île de Chambolan, et passèrent à Nicobary, où ils apprirent tout ce que nous venons de rapporter. Ces deux Missionnaires moururent accablés de diverses maladies, et surtout de maux d'estomac et de flux de ventre.

Extract from a letter from Père Taillandier, S. J., to Père Willard, S. J., dated February 20, 1711.

Le 3, nous passâmes entre les îles de Nicobar, qui sont à sept degrés de latitude au Nord d'Achen, et ce jour-là le riz manqua tout-à-fait dans le vaisseau. On donna à ces insulaires de la toile et du tabac, et ils nous donnèrent en échange des cocos et des ignames: ce sont des racines fort insipides.

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Le vaisseau mit à la voile le 10 Janvier 1710. Le 24 nous passâmes près des îles de Nicobar de 8 degrés. Les insulaires vinrent dans quatorze canots nous apporter des ignames, des cocos et quelques poules, pour les échanger contre du tabac en feuilles. Ils sont presque nus, leur couleur est d'un basané jaunâtre; parmi les noirs ils pourraient passer pour blancs. Ils font une espèce de pâte de racines qui leur tient lieu de pain; car il ne croît dans leurs îles ni riz ni blé.

Le 2 Février nous mouillâmes à la rade de Pondichery. J'ai eu depuis la douleur de me voir séparé du Père Bonnet, avec qui Dieu m'avait uni d'une façon toute particulière. Vous avez appris sans doute avec quel courage, lui et le Père Faure, sont entrés le 16 Janvier de cette année 1711, dans les îles de Nicobar, pour annoncer Jésus-Christ aux peuples barbares qui les habitent; il serait inutile de vous redire ici des particularités qu'on a déjà mandées en France. Ainsi, je me contenterai, en finissant cette lettre, de vous communiquer quelques observations que j'ai faites dans le cours de ce long voyage, et je m'estimerai heureux si elles vous font plaisir.

["Asiatic Researches" Vol. III.—Article VII.]

On the Nicobar Isles and the Fruit of the Mellori.—*By* Nicolas Fontana, Esq.

The S. W. monsoon having strongly set in on the Malabar Coast, it was deemed unsafe to remain there any longer; we therefore took our departure from Mangalore on the 20th May 1778, directing our course towards the Gulf of Bengal, and in less than ten days we came in sight of the Car-Nicobar Islands, the appearance of which, at seven or eight leagues distance, is much like a chain of mountains covered with woods; we anchored to the N. E. of one of them, in five fathoms with a good sandy bottom, supplied ourselves with water and wood, and proceeded in quest of the other Nicobars, or Nancowries as they are called, situated between eight and nine degrees of N. lat. to the northernmost point of the Island of Sumatra. They were descried on the 4th June to the S. W. ½ W. at the distance of ten leagues: the position of three of those islands forms one of the safest harbours in India, where ships of all sizes may ride with the greatest security, sheltered from all winds, about half a mile from shore; with the additional advantage of two entrances that may serve for getting in and out, both with a N. E. and S. W. monsoon, having a clear deep channel on each side.

In one of the bays formed within those islands, we moored in 12 fathoms, and there remained until the S. W. monsoon was quite over, which was in the beginning of September. The largest of those islands is called Nancaveri or Nancowry, about five or six leagues in circumference, and better inhabited than any of the other two. The second is called Soury or Chowry, and the other Tricut, all closely situated; about ten leagues to the N. E. of them is another called Katchall.*

Almost the whole of those islands are uncultivated, though there are a number of large valleys that might be rendered very fruitful with little trouble, the soil being naturally fertile, where the cocoanut and all other tropical fruits come spontaneously to the highest perfection, together with yams and sweet-potatoes, to obtain which it is only necessary to scratch the earth superficially, and the seeds so planted come forth in a few days.†

* In the year 1756, the Danish East India Company erected on one of these islands a house to serve as a Factory, but on their failure in the year 1758, it was evacuated. On the re-establishment of the Company in 1768, another house was built on Soury Island, which was in 1773, in like manner, ordered to be evacuated as useless to the Company's interests: three or four European Missionaries, with a view of making proselytes, remained behind, and have continued there ever since, but without effecting even the conversion of a single person; they collect, however, cocoanut-oil, shells, and other natural curiosities, which they send annually to their Brethren at Tranquebar.

An exact plan of those islands may be seen in the *Neptune Oriental.*

† Tricut being the flattest of those islands is divided amongst the inhabitants of the other two, where they have their plantations of cocoanut and areca trees; these last being very abundant all over the Islands.

The surrounding sea abounds with exquisite fish, shell-fish, as cockles and turtles, and a most splendid display of beautiful shells of the rarest sort are to be met with on the shore. The birds' nests,* so much esteemed in China, are also to be found among the rocks: ambergris is likewise to be met with, but the inhabitants have learned a mode of adulterating it, and it is therefore seldom to be found in a genuine state: if adulterated with any heterogeneous matter, such as wax or resin, the mode of discovery is simply by placing a small bit of it upon the point of a knife when hot, and if it evaporates without leaving any calx or *caput mortuum*, and diffuses a strong fragrant smell, it is certainly genuine.

The inhabitants of the Nicobar Islands are of a copper color, with small eyes obliquely cut,—what in ours is white being in theirs yellowish,—with small flat noses, large mouths, thick lips, and black teeth; well proportioned in their bodies, rather short than tall, and with large ears, in the lobes of which are holes, into which a man's thumb might be introduced with ease: they have black, strong hair cut round; the men have little or no beard; the hinder part of their head is much flatter and compressed than ours; they never cut their nails, but they shave their eyebrows.† A long narrow cloth made of the bark of a tree round their waist and between their thighs, with one extremity hanging down

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* Nidos hos, rupibus oceani orientalis affixos, parant hirundines marini, domesticis multo majores, ex holothariis mari innatantibus materiam decerpentes. Köempe. Amœn. p. 833.

Though little can be added to M. Poivre's description of the *Salangane* or *Hirundo nidis edúbbus*, yet, as Captain Forrest was a perfect master of the Malay tongue, and described only what he had seen, it will not be amiss to subjoin his account of that singular bird. "The bird with an edible-nest is called," says he, "*jaimaláni* by the natives of the Muluccas, and *layang-layang* by the Malays: it is black as jet, and very much like a marten, but considerably smaller. Its nests, which the Malays called *sarang*, are found in caves, and generally in those to which the sea has access; and as they are built in rows on perpendicular rocks, from which the young birds frequently fall, those caves are frequented by fish and often by snakes, who are hunting for prey; they are made of a slimy gelatinous substance found on the shore, of the seaweed called *agal agal*, and a soft greenish sizy matter often seen on rocks in the shade when the water oozes from above. Before a man enters such a cave, he should frighten out the birds, or keep his face covered. The *jaimaláni* lays her eggs four times a year, but only two at a time: if her nest be not torn from the rock, she will use it once more, but it then becomes dirty and black: a nest, used but once before it is gathered, must be dried in the shade, since it easily absorbs moisture, and if exposed to the sun, becomes red. Such edible-nests are sometimes found in caves which the sea never enters, but they are always of a dark hue, instead of being, like that now produced, very nearly pellucid: they may be met with in rocky islands over the whole Eastern Archipelago (by far the largest in the world), but never, I believe, on the coast of China, whither multitudes of them are carried from Batavia. The white and transparent nests are highly esteemed, and sold at Batavia for seven, eight, nine, or ten dollars a catty of 1⅓lb.; but the crafty Chinese at that port, who pack up the nests one in another to the length of a foot or eighteen inches, that they may not easily be broken, seldom fail, by a variety of artifices, to impose on their employers."

† It is a custom among them to compress with their hands the occiput of the new-born child, in order to render it flat, as, according to their ideas, this kind of shape constitutes a mark of beauty, and is universally esteemed such by them: by this method, also, they say that the hair remains close to the head as nature intended it, and the upper fore-teeth very prominent out of the mouth.

behind,* is all their dress. The women and men are of the same copper color, and very small in stature: a bit of cloth, made with the threads of the bark of the cocoanut tree, fastened to the middle, and reaching half way down the thigh, forms all the covering of the women. Both sexes are, however, very fond of dress; and when the men go into the presence of strangers, they put on hats and old clothes that had been given them by Europeans; but among themselves they are almost naked.

They live in huts made of cocoanut leaves of an oval form, supported on bamboos, about five or six feet high from the ground; the entrance into the huts is by a ladder; the floor is made partly of planks, and partly of split bamboos. Opposite to the door, in the furthermost part of the hut, they light their fire and cook their victuals: six or eight people generally occupy one hut, and a number of skulls of wild boars forms the most valuable article of furniture.

The occupation of the men consists in building and repairing their huts, which affords them an annual employment for six months at least, and in fishing and trading to the neighbouring islands. The women are employed in preparing the victuals and cultivating the ground; they also paddle in the canoes when the men go out. They unite in matrimony through choice, and, if the man is not satisfied with the conduct of the woman, either from her inattention to domestic concerns, or sterility, or even from any dislike on his part, he is at liberty to discharge her, and each unites with a different person, as if no such connection had taken place. Adultery is accounted highly ignominious and disgraceful, particularly with persons not of the same caste: should it be proved, the woman would not only be dismissed with infamy, but on some occasions even put to death; although, by the intervention of a small token given publicly, and consisting of nothing more than a leaf of tobacco, the reciprocal lending of their wives of the same caste is exceedingly common.

A woman who bears three children is reckoned very fruitful; few bear more than four; the cause may be attributed to the men, from a debility occasioned by the early intrusion of the testicles into the abdomen, the hard compression of them and the penis by the bandage round those parts, from premature venery and hebetation brought on by the immoderate use of spirits, and from the very inactive and sedentary life these people lead, it will not be difficult to account for that want of longevity which seems to prevail much in those islands, more

* A traveller called Keoping, a Swede, who went to the East Indies on board a Dutch ship in the year 1647, which anchored off the Nicobar Islands, relates that they discovered men with tails like those of cats, and which they moved in the same manner. That having sent a boat on shore with five men, who did not return at night as expected, the day following a larger boat was sent well manned in quest of their companions, who, it was supposed, had been devoured by the savages, their bones having been found strewed on the shore, the boat taken to pieces, and the iron of it carried away. The account of this voyage was reprinted at Stockholm, by Silvium, in the year 1743. Linnæus seems to have been too credulous in believing this man's story, for in all my examinations I could discover no sort of projection whatever on the *os coccygis* of either sex. What has given rise to this supposed tail, may have been the strip of cloth hanging down from their posteriors, which, when viewed at a distance, might probably have been mistaken for a tail.

especially amongst the men, where none were to be seen older than forty or forty-eight years. The women, on the contrary, seem to live much longer.

They are themselves so sensible of the scanty population of their islands that they study to increase it by inviting and even seducing some Malabars or Bengalese to remain amongst them when brought thither by the country ships, and of whom there are in almost all villages some to be found, who may be easily discerned from the natives by their figure, features, color, and language. The natives encourage their stay by grants of land with plantations of cocoanut trees and arecas, and after a certain number of years they are permitted to make choice of a female companion.

Their indolence is not to be equalled by any other people of the East. They go out a fishing in their canoes at night, and with harpoons, which they dart very dexterously at the fish, after having allured them into shallow water with burning straw; a sufficient number is soon caught to serve the family for a meal: they immediately return home, and, if by chance they catch a very large fish, they will readily dispose of one-half and keep the remainder for their own use.

They entertain the highest opinion of such as are able to read and write; they believe that all Europeans by this qualification only are able to perform acts more than human; that the power of divination, controlling the winds and storms, and directing the appearance of the planets, is entirely at our command.

This people like other savage nations dread the evil genius; some among them give themselves the air of divination, and presume to have secret confabulations with him; superstition must ever be in its full dominion where ignorance is so gross.

Some of the natives having begun to fabricate earthen pots soon after died, and the cause being attributed to this employment, it has never been resumed; since, they prefer going fifteen or twenty leagues to provide them, rather than expose themselves to an undertaking attended, in their opinion, with such dangerous consequences.

Whenever they visit one another, no sort of compliment or salutation takes place between them; but when the visitors take leave, they are profuse in good wishes, that last for some minutes, with different inflections of voice, to which the other constantly answers by repeating the words *Callá callá; condi condi, quiagé,* which may be rendered in English thus—"Very well, very well; go, go, and return soon."

Behind or close by their huts the dead are buried: all the relations and acquaintance cry for some hours before the corpse is put into the grave, where it is interred with all possible solemnity, and in the best dress they can muster, and with abundance of food. After the body is covered with earth, a post is raised and fixed in the ground over the head of the deceased, about four feet high, to the top of which they suspend strips of cloth with meal and areca nuts, and strew cocoanuts

all around. This supply of food for the deceased is ever after continued; a cocoa tree is also cut down for every person that dies. As soon as a man is dead his name is never mentioned, even if repeatedly asked; every one of the mourning visitors brings a large pot of toddy. The women sit round the corpse howling and crying, and by turns they go and put their hands on the breast and belly of the deceased, who is covered with striped cloth; the men are seated at a little distance, drinking and inviting all the visitors to do the same, endeavouring thus to dispel their grief by a complete general intoxication, which never lasts less than a couple of days after the interment.

The different changes in the moon are productive of great festivity and mirth among the Nicobarians, when the doors of their huts are decorated with branches of palms and other trees: the inside is also adorned with festoons made of slips of plantain leaves. Their bodies are, in like manner, decorated with the same ornaments, and the day is spent in singing and dancing, and eating, and drinking toddy, till they are quite stupified.

The idea of years and months and days is unknown to them, as they reckon by moons only, of which they number fourteen, seven to each monsoon. At the fair season, or the beginning of the N. E. monsoon, they sail in large canoes to the Car-Nicobars called by them *champaloon*. The object of this voyage is trade; and for cloth, silver cion, iron, tobacco, and some other articles, which they obtain from Europeans, together with fowls, hogs, cocoa, and areca nuts, the produce of their own island, they receive in exchange canoes, spears, ambergris, birds-nests, tortoise-shell, and so forth.

Ten or twelve huts form a village. The number of inhabitants on any one of these islands does not exceed seven or eight hundred. Every village has its headman, or captain as they term him, who is generally the oldest. Few diseases are known amongst them, and the venereal not at all; the small-pox visits them occasionally, but not of the confluent kind; what is more prevalent amongst them is the œdematous swelling of one or both of the legs, known in the west of India under the name of the *Cochin leg*, from the place where this disorder generally prevails. This endemial disease may be imputed to the following causes: ill-chosen and badly prepared diet, the bad choice of habitations, and an extremely indolent, inactive life. Fevers and colics are also frequent among them; when a person falls sick, he is immediately removed to the house of one of the priests, or conjurers, who orders the patient to be laid in a supine posture for some time; then friction with some oily substance is applied to the upper part of the body, and often repeated; which remedy they indiscriminately use for all complaints, never administering medicines internally.

The only quadrupeds on these islands are hogs and dogs; of the former, however, only the sows are kept, and they are fed principally with the milk of the cocoanut and its kernel, which renders the meat of a firmness and delicious taste, even superior both in color and flavour to the best English veal. It may be worthy of remark that, although the

neighbouring Car-Nicobar woods abound with monkeys of different species, none are to be seen in these islands, notwithstanding their having been repeatedly brought over; they neither propagate, nor do they live for any time.

Among the feathered tribe, wild pigeons are pretty abundant from June to September, on account of a berry which is then ripe, and on which they feed with great eagerness: at the same time pheasants and turtle doves are frequently found; the constant inhabitants of the woods are a species of the green parrot, or parroquet, with a black bill and collar; no other birds are to be found in them.

The climate is pure, and might with little trouble be rendered very salubrious: constant sea-breezes fan their shores, thus preserving them from oppressive heat: vegetation continues without intermission: the woods are very thick, and the trees are bound together by a kind of twig or creeping shrub that renders them almost impervious.

The Nicobar dance is as dull and inanimate as can be conceived, as well for the slowness and heaviness of its motions, as for the plaintive monotonous tune that accompanies it, with no instrument but their mournful, low voices, which are in perfect unison with the motion of their bodies. Men and women form a circle by putting their hands on each other's shoulders, they move slowly backwards and forwards, inclining sometimes to the right and sometimes to the left.

The whole of their music consists of the following notes:—

The basis of the language spoken by these islanders is chiefly Malay, with some words borrowed from Europeans and other strangers, as will appear by the following specimen:—

Chia	...	Father.
Cioum	...	Grandfather.
Chia Enchána	...	Mother.
Ochiá	...	Uncle.
Encognee	...	Man.
Covon	...	Son.
Encáná	...	Woman.
Cance	...	Wife.
Chegnoun	...	Child.
Choi	...	Head.
Lal	...	Forehead.
Moha	...	Nose.
Holmat	...	Eyes.
Manonge	...	Lips.
Caleta	...	Tongue.
Incaougn	...	Chin.
Nann	...	Ears.
Enchojon	...	Hair.
Sciafin	...	Evening.
Hatahom	...	Night.
Kamben	...	Noon.
Menzovi	...	Yesterday.
Holáctas	...	Tomorrow.
Charou	...	Great.
Mombeschi	...	Small.
Koan	...	Strong.
At loan	...	Weak.
Jo	...	Yes.
At chiou	..	No.
Lapoa	...	Is good.
Pisi	...	Is enough.
Thiou	...	Me or I.
Mhihe	...	You.
Kalakala younde.		Farewell.
Emloum	...	Gold.
Henoe	...	Fire.

Halikolala	...	Neck.	Dheah	...	Water.
Tha	...	Breast.	Lhoe	...	Cloth.
Vhian	...	Belly.	Lanoa	...	A strip they wear.
Foún	...	Navel.	Gni	...	House.
Choal	...	Arm.	Tanop	...	Pipe.
Eckait	...	Shoulders.	Carrovaj	...	Lemon.
Och	...	Back.	Hoat	...	Old cocoanut.
Kinitay	...	Head and Fingers.	Gninoo	...	Green ditto.
Poto	...	Thigh.	Nat	...	Cane.
Colcanon	...	Knee.	Pantan	...	Rattan.
Hanhan	...	Leg.	Aptejo	...	Chest.
Ciscoa	...	Nail.	Cerum	...	Needle.
Hignoughn	...	Beard.	Hendal	...	Musket.
Tohon	...	Sick.	Henathoa	...	Knife.
Lha-ha	...	Dead.	Danon	...	Medicine.
Hivi	...	Devil.	Heja	...	Betel-nut.
Hen	...	Sun.	Achoe	...	Betel-leaf.
Chae	...	Moon.	Cion	...	Lime.
Hāyi	...	Wind.	Chapeo*	...	Hat.
Onejo	...	Water.	Lenzo*	...	Handkerchief.
Gnam	...	Calm.	Hanchan chapeo.		Put on your hat.
Tenfagi	...	Daylight.	Not	...	A hog.
Ham	...	A dog.	Duonde	...	To paddle or row.
Cochin	...	A cat.	Poushile	...	To set down.
Taffoach	...	Hen.	Hahahon	...	To vomit.
Ohia	...	Egg.	Achicienga	...	To stand.
Inlegne	...	Bird's nest.	Hichiackeri	...	To speak.
Cuttoch	...	Parrot.	Athe bet	...	To write.
Cha	...	Fish.	Ajouby	...	To light.
Cap	...	Tortoise-shell.	Luva	...	Lead.
Hanino	...	To eat.	Caran	...	Iron.
Peoum	...	To drink.	Chánlo	...	Shirt and Coat.
Etaja	...	To sleep.	Hănhă	...	Breeches.
Ha-caou	...	To buy.	Hanho lola	...	Stockings.
Hen vhej	...	To sell.	Dhanapola	...	Shoes.
Laam	...	To lay down.	Halhut	...	Bracelet.
Hancihatena	...	Come hither.	Henp-ojóu	...	Chair.
Ciou	...	Begone.	Cheracha	...	Table.
Hetbaj	...	To laugh.	Pará	...	Dollar, or silver.
Houm	...	To weep.	Thanula	...	Black.
Hanan	...	To dance.	Chunla	...	Red.
Hame	...	To rain.	Unat	...	White.
Pheumboj	...	To smoke.	Cambalamagn	...	Striped cloth.
Hansciounga	...	To walk.			

NUMERALS.

Heán	...	One.	Encata	...	Nine.
Haá	...	Two.	Sicom	...	Ten.
Loe	...	Three.	Sicomhean	...	Eleven.
Toan	...	Four.	Sicomhăa	...	Twelve
Tanee	...	Five.	Hemom Thouma		Twenty.
Tafoul	...	Six.	Rocate	...	Thirty.
Isat	...	Seven.	Toanmoan Thiuma		Forty.
Enfoan	...	Eight.	Sicom sicom	...	Hundred.

It seems that they have no expression for the numbers beyond forty, except by multiplication.

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* These two words are borrowed from the Portuguese.]

Trees of great height and size are to be seen in their woods, of a compact texture, well calculated for naval constructions;* but the productions of which they are more particularly careful are the cocoa and *areca* trees, the last being chiefly for their own consumption, as they chew it all day long with tobacco, betel-leaf, and shell-lime: the former is not only useful for their own and their hogs' nourishment, but also an object of trade. Most of the country ships that are bound to Pegu from either of the coasts of India touch at the Nicobar Islands in order to procure a cargo of cocoanuts, which they purchase at the rate of four for a tobacco leaf, and one hundred for a yard of blue cloth, and a bottle of cocoanut oil for four leaves of tobacco. The tropical fruits grow in those islands exquisitely flavoured, the pine-apple in particular: wild cinnamon and sassafras grow there also; the coffee tree in two years yields fruit; yams are to be found for three or four months in the year only, and are eaten by the natives instead of the *larum*, a nutritive fruit, in the description of which, and the tree that produces it, we shall here endeavour to be very particular.

The tree that bears this nutritive fruit is a species of palm, called by them *larum*, by the Portuguese *mellori*, and is very abundant in those islands, as well as in Car-Nicobar: it grows promiscuously in the woods among other trees, but it delights more particularly in a damp soil. The trunk is often straight, thirty or thirty-five feet high, and ten or twelve inches (the oldest even two feet) in circumference: the bark is smooth, ash-colored, with equidistant intersections, of a compact hard texture in its interior part, but soft and quite hollow in the centre from the top of the trunk: the leaves grow disposed like a calyx, about three feet long and four inches broad, ensiform and aculeate, of a dark green hue, and of a tenacious hard substance: the roots are out of the ground, and inserted at eight or ten feet on the trunk, according to its age, being not quite two feet in the earth: the fruit, which has the shape of a pine, and the size of a large jack, comes out of the bottom of the leaves: the age of a man is seldom sufficient to see the trees bearing fruit: its weight forces it out of the leaves, and when it is nearly ripe, which is known by the natives on the change of its color from green to yellowish, it is gathered, and weighs from thirty to forty pounds. The drupes are loosened by thrusting a piece of iron between their interstices: the exterior surface is cut off, and thus put into earthen pots covered with leaves, then boiled on a slow fire for several hours together: the frut is sufficiently boiled when the medullary part of it becomes soft and friable; it is then taken from the fire and exposed to the cold air; when cold, the drupes are separated from the stalk, and the medullary part pressed out by means of a shell forced into them. Within the woody part of the drupes there are two seeds, in shape and taste much like almonds: the soft part is then collected into a spherical mass, and in order to extract all the stringy fragments remaining in it by the compression of the shell, a thread is passed and repassed, until the whole is extracted, and it comes out perfectly clean: it is then of a pale yellow color, much resembling

* One of these trees that our people cut down measured nine fathoms in circumference, or fifty-four feet.

polenta, or the dressed meal of the *Zea Mays,* and in taste much like it: when not newly prepared it has an acidity, to which it tends very strongly if long exposed to the atmosphere; but it may be preserved a long time if well covered.*

It is certain that the Nicobar bread-fruit tree differs very essentially from the palm described by Mr. Masson, and found in the interior parts of Africa, which bears a sort of bread-fruit. On my showing to Mr. Masson, in March 1790, the drawing of the tree here described, he was pleasingly surprized at the novelty, and declared he had never before seen it. It differs also from the bread-tree found in *Otaheite,* and described by Captain Cook in his *Voyage Round the World,* as will appear very evident on a reference to the notes of that work. Some shrubs, whose leaves resemble much those of the Nicobar bread-fruit tree, are to be seen on the Coromandel Coast and in the Isle of France, where they thrive in some degree, but never attain the height of those at Nicobar: imperfect small fruits are seen once a year sprouting out, and the inhabitants derive an advantage from the leaves of the tree, which they convert into mats and bags to hold coffee.

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* *Note by the President.*—As far as we can determine the class and order of a plant from a mere delineation of its fruit, we may safely pronounce that the *larum* of Nicobar is the *cadhi* of the Arabs, the *cetacu* of the Indians, and the *pandanus* of our Botanists, which is described *very awkwardly* (as Koenig first observed to me) in the supplement to *Linnaeus;* he had himself described with that *elegant conciseness,* which constitutes the beauty of the *Linnaean* method, not only the wonderful fructification of the fragrant *cetacu,* but most of the flowers which are celebrated in Sanscrit by poets for their color or scent, and by physicians for their medical uses; and, as he bequeathed his manuscripts to Sir Joseph Banks, we may be sure that the public spirit of that illustrious Naturalist will not suffer the labors of his learned friend to be sunk in oblivion. Whether the *pandanus larum* be a new *species,* or only a variety, we cannot yet positively decide; but four of the plants have been brought from Nicobar, and seem to flourish in the Company's Botanical Garden, where they will probably blossom, and the greatest encouragement will, I trust, be given to the cultivation of so precious a vegetable. A fruit weighing twenty or thirty pounds, and containing a farinaceous substance, both palatable and nutritive in a high degree, would, perhaps if it were common in these provinces, for ever secure the natives of them from the horrors of famine; and the *pandanus* of Bengal might be brought, I conceive, to equal perfection with that of Nicobar, if due care were taken to plant the male and female trees in the same place, instead of leaving the female, as at present, to bear an imperfect and unproductive fruit, and the distant male to spread itself only by the help of its radicating branches.

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A few particulars respecting the Nicobar Islands.—By the REV. J. M. CHOPARD, *Missionary Apostolic, dated 2nd June* 1844. *Extracted from the Journal of the Indian Archipelago, Vol. III.*

As far as my acquaintance with the natives of those islands and their language enabled me to carry on my investigations during a stay of about two years amongst them, I do not think that the amount of the whole population, spread or scattered over the Nicobar Archipelago, exceeds the moderate amount of 8,000 souls, of whom about 2,000 inhabit Car Nicobar. Terressa, where I was settled, had a population of about 500 souls.

Being but slightly acquainted with few of the languages of India, I am not able to trace back, through that channel, the origin of the savages of those islands. The shape of their body, and particularly the features of the face, incline me to believe that they belong rather to the Hindoo race, than to the Burmese or Malayan. The hair is not of a deep but rather slight black; the eyes black; the nose aquiline; the body well shaped and proportioned; the stature exceeds that of the Burmese and Malays. The Nicobarians are strong and capable of carrying very heavy burdens. I have seen some of them carrying without any trouble 200 cocoanuts. I had with me a large trunk filled with books which I was hardly able to move, one of the natives, to my great surprize, placed it upon his shoulders, and walked a good distance without being apparently fatigued.

All the inhabitants or aborigines belong to the same race. In the islands of the south it strikes me that there is some mixture of Malay blood; in those parts too the Malay language is very extensively, or rather universally, known.

I have much questioned the natives concerning their origin and the epoch when their ancestors landed first on those shores, but nothing satisfactory upon that important point could be obtained. The impression their different stories have left upon my mind is, that from a very remote period the Nicobar Archipelago has been inhabited. It is hardly necessary to notice that their narrations upon that subject ended invariably in ridiculous and puerile fables, to which no credit can rationally be given. The absence of any monument whatever will probably leave the question for ever unsettled.

The language used by the Nicobarians is polysyllabic, abounds in vowels, and its pronunciation is harsh, and far from being harmonious. After my arrival, when I heard the natives speaking, it appeared to me that the sound formed in the throat came out through the nose, and that the tongue,—the usual instrument for producing distinct sounds,—had very limited functions in their language. Young boys, as speaking generally more distinctly than grown-up persons, were my teachers at first, until my ears had been practised to the hearing of such confused sounds.

The chief food of the Nicobarians is the pulp of the cocoanut, yams, plantains, *papayahs*, fowls, and, above all, pigs, which abound in those islands. It is not uncommon to see round a single hut 40, 50, or 60 of them. The quantity of pigs killed and eaten is almost incredible, yet the Nicobarians, however voracious, separate the grease from the flesh, and keep it separately for culinary purposes; they never eat, or rather devour, anything but the flesh, and that for a single festival day. To satisfy my curiosity I saw and counted 75 large pigs killed for satiating the wolf-like appetite of the inhabitants of a considerable district of my island. In this respect the Chinese could not be a match for the Nicobarians.

Notwithstanding this immoderate use of food, the natives are seldom to be seen with those nasty and disgusting ulcers so common amongst the Chinese who belong to the poorer class. They are attacked with many cutaneous diseases, but not of the worst kind. I do not recollect having ever met with a single individual marked with the small-pox, a circumstance which induces me to believe that that disease is quite unknown in those islands. Twice a year almost all the inhabitants are attacked with a severe cough accompanied with fevers. The Nicobar Islands are famous as a place where strangers are inevitably attacked with a most violent fever. My unfortunate companion fell a victim to its malignity, I very narrowly escaped, and at last was compelled to go to Mergui, on the Tenasserim Coast, for the recovery of my most debilitated health, yet I believe that, with a stock of good medicines, and especially quinine, one can live in those islands and successfully check the fever. The probable cause of the unhealthiness of the country is its uncultivated state, the number of streams stopped in their course by fallen and decayed trees and plants, and forming many swamps and marshes. Should the country be cleared of its jungles, so far as to afford a free circulation to the air, I have no doubt that the Nicobars would not prove a more unhealthy place than other countries situated under the same latitude. Although fever seems to spare partly the natives to a certain extent, the period of their existence is confined between narrower limits than that of Europeans; it is exceedingly rare to see men living beyond 60 years, and women 50. From what I heard from the natives, population is certainly on its decline, and should Christian civilization not come to the help of those wretched savages, the time is probably not distant when they will have disappeared entirely, as so many wild tribes have done in different parts of the world.

The Nicobarians do not possess the slightest knowledge of a Supreme Being; they have no religious worship whatever, unless we give such a name to the superstitious ideas they entertain concerning the souls of the dead. They dread much the souls of wicked people, because they believe that, after their demise, or the separation of their earthly abode, those souls retain their former malicious propensities, and endeavour to annoy the living. The Nicobarians believe that they can propitiate those evil spirits by making to them some offerings. It is customary among them to make great rejoicings on

the occasion of the funeral of old people. The defunct, previously to his departure from this world, fattens a number of pigs and fowls, which are to be eaten on the occasion of his funeral. Next to this, in point of folly, the parents invariably bury with the corpse all the small property belonging to the deceased, such as clothes, or rather rags, silver, knife, &c., This is the reason why the silver they get in exchange for their cocoanuts, or which they rob from vessels which happen to fall a prey to their rapacity, disappears almost completely, without affording them any profit.

The Nicobarians hold in dishonor simultaneous polygamy, but do not scruple at all about successive polygamy; that is to say, they never keep more than one wife at once, but they are easy in dismissing her for the slightest motive, and taking another. The dismissed wife is not considered as dishonored, but can easily find another husband. This is perhaps the principal reason of the comparative sterility of those women, notwithstanding their being of a corpulent and stout complexion. The females are universally far from being fair, and indeed they are probably the ugliest in the world; they shave their heads in order to add, as one would believe, to their natural ugliness and deformity.

The chief productions of the country are the cocoanut and the betel-nut. The cocoanut tree grows on the flat ground, chiefly along the shores and in the valleys. The nut is not of a large kind, but filled with a thick pulp which yields more oil than the nut of a longer kind. The yams of Nicobar are probably the finest in India, both in size and quality. Oranges are very abundant and remarkably sweet. Various sorts of plantains are to be found. I had taken with me some seeds of different kinds of vegetables, they grew remarkably well, and their taste appeared to me not inferior to those of the same kind I had eaten here. There is no timber of a large description; the hilly part of the country is covered with a high grass which the natives are in the habit of partially burning every year.

The Danes are, I believe, the only Europeans who have made an attempt to colonize those islands. In about the middle of the last century they settled at Carmorta, but the little colony was soon swept away by the fever. It is said that many Danish Missionaries died in that island; their tombs are still to be seen, of course, in a very decayed state. When I went to that place I was so weak and exhausted that, to my regret, I could not go near them. The Missionary efforts appear to have been entirely unsuccessful, although they labored during a period of 30 years. I have found among the inhabitants of that island no vestige at all of Christianity. The only thing which is likely to perpetuate the remembrance of the Danish Settlement is the great number of wild cows which have multiplied from the stock brought over by the Danes.

In time of war the Nicobar Islands have often afforded a shelter to vessels; sometimes they went there to get water; Admiral Suffren

when cruising in the Indian seas touched there several times. During the late war the French Privateers anchored several times in the harbour of Nancowry; up to this day the natives have retained many French words, mostly those coarse expressions which are chiefly used by sailors. I must say that they appear very quick in picking up a little of the languages used by the navigators who visit their islands; they understand besides Malay and a little of Portuguese, English, Hindoostanee, and Burmese.

The only iron weapons they use are those they receive from foreigners in exchange for their cocoanuts, such as knives of different sizes and spears. Some of them possess muskets, but use them very little. They are much afraid of that weapon; a single man, by pointing at them a musket, would probably make them run away like a flock of sheep. Their favourite weapon, which is peculiar to them, is a sort of javelin, which they throw to a great distance of 50 yards, they often poison the point of the weapon, and the poison they use is a most subtle one.

From what I have seen of this people, I do not believe they are naturally cruel and fond of spilling the blood of their fellow creatures. They have an aversion for such a deed, yet cupidity, or the desire of procuring things they are fond of, can prevail upon the inhabitants of the Southern Islands to perpetrate murder. Silver, either coined or in other shapes, seems to have a peculiar attraction for them, and is the article which chiefly induces them to commit murder upon the crews of vessels they suspect to have on board money or silver things. Cowardice accompanies them in the execution of their nefarious designs. They wait for the moment when the poor sailors are not on their guard to fall upon them and despatch them as quickly as they can, but they would never dare to make an open attack even upon a native crew.

The following instance is an illustration of their way of attacking and murdering people. I vouch for the accuracy of the facts which I am about to relate, as I heard the story related to me by different natives on the very spot where the murder took place:—

This year, about the end of January, a brig coming from Calcutta anchored at Carmorta Island, in a place called False-point; the vessel was commanded by a native. There was on board either a European, or a half-caste (he was dressed like a European), a Chinese carpenter, and a crew of about 25 lascars, half Malays and half Bengalese. After having taken on board about 1,000 cocoanuts, the boat, with a part of the crew, was sent on shore to take water; they were well received by the natives, who invited them to rest and drink some cocoanut water. The treacherous offer was gladly accepted by the unsuspecting sailors. When they were quietly enjoying the refreshing drink, a party of natives, hidden behind bushes, rushed out suddenly, and with their large knives killed the poor sailors before they had time to act in defence; at the same time another party went to the vessel, as they

were in the habit of doing, the sailors were eating their rice, the natives instantly fell upon them and soon despatched them. It appears that they did not stab the captain, but three stout men seized him by the waist, and smashed his head upon the deck; this being done, they plundered the vessel; having taken what they liked, they brought to the vessel the corpses of those who had been murdered on shore, made a hole at the hull, and sunk her.

An inhabitant, about 35 years old, told me that he recollected of seven other vessels which had been cut off in the same manner; at Great Nicobar Island, a still greater number of similar deeds have been perpetrated, because the inhabitants are more cruel than in any other place.

Notice of the Nicobar Islands.—By the REV. P. BARBE.

THE Nicobar Islands, lying between the sixth and tenth degrees of N. latitude, have for some time attracted very much the attention of the public in India, not so much on account of the productive qualities of their soil, but because of the islanders having committed repeated murders on the crews of several vessels under the British flag. Vessels sailing from the Coast or from Penang have, for a long period of years, touched there during the N. E. monsoon to take a cargo of cocoanuts, as do also large China junks, Malay prahus, and Burmese boats from Bassein, Rangoon, and the Tenasserim Coast. Not a single year has passed without hearing of some vessels or boats being lost. But as no one suspected the islanders to be capable of piracy, the loss was always attributed either to bad weather or to the incapacity of the captains. It is but a few years since Government has been convinced that the Nicobarians, although destitute of real courage and bravery, have been guilty of the greatest crimes, in murdering peaceful people, who could not suspect that the natives, whose appearance is so simple and timid, would ever conceive and dare to execute such treacherous designs. So there is very little doubt now that a great part of the vessels which were supposed to be lost in the Bay have been cut off and plundered by the natives of these islands, and their crews found there a watery grave.

The various islands forming the group of the Nicobars are Chowry, Terressa, Bompoka, Tillangchong, Carmorta, Nancowry, Katchall, Car-Nicobar, the Little Nicobar, the Great Nicobar, and some other smaller islands. The S. W. monsoon begins in the latter part of May and lasts till October. During that period rain falls in great abundance, and the wind blows hard: there is a heavy swell, and it is dangerous to approach the islands. Few vessels touch there during that monsoon; but in the N. E. monsoon, vessels and Burmese, Chinese and Malay boats are seen there taking a cargo of cocoanuts, betel-nuts, and collecting birds' nests, *trepang* or sea-slug, ambergris, tortoise-shell, &c. They give in barter black and blue cloths, coarse handkerchiefs, red cloth, cutlasses, Burmese dâos, silver or German-silver spoons, ardent spirits, tobacco, red woollen caps, old pantaloons and jackets, black hats, &c. When a vessel reaches the place, the people of the village contract for supplying a cargo in so many days, and they seldom fail to fulfil their engagement; they take in advance generally the goods given in barter.

The Nicobarians are not very expensive in their dress; a small piece of blue cloth, from three to four inches broad, and four or five feet long, tied round their loins, is the covering of a man; sometimes they encircle their heads and loins with young branches or grass. When the headmen of the villages go on board the vessels, they are more decently clad: they have a black hat or red cap, coat, jacket, pantaloon, &c. The women, in opposition to the custom of persons of their sex in

other countries, shave their heads, wrap round their loins grass tied with a string about a cubit broad; and on great occasions a piece of blue cloth over the grass. When they appear in public, they generally cover their breasts. Men and women use so large a quantity of betel-nut, lime, and betel-leaves, that their teeth are as black as ink; and the space between them being filled with that matter, they appear as a solid piece, much like the horn invested in the jaws of the tortoise.

It is very difficult to have an accurate notion concerning the origin of the Nicobarians. They have projecting check-bones, flat visages, flattened nose, scanty beard, straight black hair, and Chinese eyes. Their complexion is dark-olive; they are corpulent muscular, and well-made; but their legs are rather short in comparison with the trunk; the lower extremity being more developed than the upper one. Their general size is from five feet to five feet two inches. But the inhabitants of Chowry are of a darker complexion, more muscular, and have an air of independence, which is one characteristic mark of the Burmese. I saw some men and women at Terressa belonging to Chowry, and judging by them, the general height of these islanders must be from five feet five inches to five feet ten inches. Although these people appear to hold some relation to the Malays, on account of the resemblance of many of their features, yet the shape of their eyes, their manners, religion, language, and many characteristics are so different, that they must be considered as a particular race. The Malays having not settled there, the Nicobarians have preserved the pure blood of their ancestors. I am not far from thinking that they belong to the same race of people who formerly lived on the sea-shore of Sumatra. When the Malays settled in the island, they took possession of the whole of the level country, and compelled the Battas, the original inhabitants, who would not mix with them, to take refuge in the interior of the island, so that race is now master only of the mountains.

There is a tradition amongst the Nicobarians that the first stranger who came to their island, seeing something moving on the sand, perceived small persons of the size of an ant. He took care of them till they attained the common size of men, so began the origin of the Nicobarians. According to another tradition, a man sprung out from the ground, and taking a bitch for his wife, had two children, who, in the course of time, peopled the island. A man murdered was buried, and from his head sprung the first cocoanut tree; some time after all the inhabitants were destroyed by an inundation, with the exception of one man and one bitch, who again peopled the island. In the course of time a vessel, having a prince for captain, visited Terressa, who, on his landing, was murdered by the inhabitants; his wife was taken on shore, and treated with the greatest respect, but the spot on which was shed the blood of her husband, being always before her eyes, she was very unhappy. On one night she was advised in a dream by her mother to remove that bloody spot from Terressa; she did so, and then Bompoka was separated from that island.

The inhabitants of Teressa believe that the people of Nancowry are the descendants of Malays, who, visiting in their fishing excursions that island, lost their boats and settled there. The Car-Nicobar people are, according to them, descendants of the Burmese, who, in a revolution which took place in their country, were obliged to run away from the Tenasserim Coast and landed at Nicobar.

The dialects spoken by the islanders differ more or less; and the difference does not arise only from pronunciation, but from a great many words which are not the same; so that the inhabitants of one of the islands can scarcely make themselves understood by the inhabitants of another.

The islanders having no written language, the few words to be found at the end of this letter have been therefore orally communicated to me. I wrote them as the sounds occurred to my ear, without presuming to say that I have succeeded in representing them correctly.

The Nicobarians show great skill in the building of their houses and boats. Their dwellings are strongly built; they are supported by large posts, and are elevated above the ground from eight to nine feet. The flooring, which is made of planks, has a circular form, and the roof, which has the shape of a beehive, is covered with grass, called *lalung* by the Malays, about a foot thick. They are without windows, nor have they any partition. The entrance is from below; these houses will last from ten to twelve years without repairs; and there is no other furniture but earthen pots, cocoanut-shells to carry water, a round piece of wood which they use for a pillow, spears, knives, swords, and the *ika*, which is their general food.

Their boats vary in size from six to twenty feet long, and from two to four feet broad, having an outrigging: they are generally safe; two or three poles support their sails. It is a pleasure to see how well these natives manage their canoes when meeting the surf.

These islanders are lazy and inactive, cowardly, treacherous, drunken, and I am sorry to say that crimes against nature are not unknown to them. Every evening the villagers meet in one of the houses, and there they spend part of the night in drinking, singing, and dancing. Like children they desire everything they see, without troubling themselves whether the object be useful or not. When a vessel arrives, the headman of the village in his best dress goes on board, accompanied by some other persons, whom he always calls his children. They offer to the captain young cocoanuts, yams, and plantains. If asked what they wish to have in return, their answer is, *Hahekienten man*, which means "You are my father." Although they seem to have no wish for all that they see, yet they expect to get drink or something else. The headman then hands the certificate he has received from former captains. It is impossible to avoid laughing when the high sounding names of Byron, Smith,

Rodney, Nelson, &c., are given to the bearers of the certificate. If a captain treat some of them very kindly, and make to them some presents, he is sure that some of the islanders will be called after his name. In the year 1832, I saw at Rangoon two persons from Car-Nicobar; they paid a visit to the Italian Bishop who was there, and they were so much pleased with some trifle they received from him, that the old man told him—"My name being Captain John, I cannot take your name; but my son not being captain yet, he shall be henceforth called Captain Bishop." The Nicobarians have different names. If they go on board an English vessel, they take an English name, if on board a junk, they take a Chinese name, &c.

The Nicobarians appear to have a great facility for learning languages; I do not mean to say that they speak the languages very well, but they are able to make themselves understood in many. The Portuguese, spoken in Mergui, is their favourite language; and the respectable people of the different islands are more or less acquainted with it. The Malay is well understood by some of the people of Nancowry, and the Great and Little Nicobars; some of the people can speak a little English, Burmese, Chinese, Hindoostanee, &c., &c.

In mentioning the character of these people, I have stated that they are treacherous, and as a proof of it, I shall relate the following facts:—In 1833, a Cholia vessel was cut off in the False Harbour of Nancowry, and every person on board murdered. In 1839, the pilot of a whaler being anchored at the same spot, the captain, some of the officers, and the greater part of the crew, were slaughtered by the natives. In 1844, Captain Ignatius Ventura, from Moulmein, commanding the *Mary*, anchored on the N. side of Terressa at 2 o'clock in the afternoon: one hour after, the captain and crew were murdered. In the same year, Captain Law met the same fate at Carmorta. Another vessel three years ago, after having taken part of her cargo at Katchall, sailed to the False Harbour of Nancowry to complete her cargo, there also the captain and crew were slaughtered by the natives. The headman of Katchall, who had given a part of the cargo to the above vessel, related the fact to me. He spoke in the highest terms of the captain of the said vessel, as likewise of Captain Ventura. I was well acquainted with the last mentioned person; he was most kind and honest, consequently incapable of provoking any person. But it appears that it was not so with the vessel first mentioned, they highly exasperated the natives by their conduct.

It does not appear that the Nicobarians have any exact idea of a Supreme Being. They say it is true that there is a great spirit, whom they call *Reos*. But I suspect that this word they have received from the Christians of Mergui, who have been visiting these islands during the last two centuries; the words Deos and Reos are so nearly alike that the one appears to be a corruption of the other. They admit the existence of spirits to whom they attribute sickness, death, and scarcity in the crops; they offer them pigs, fowls, &c., to propitiate them. Once in the year, and sometimes when great sickness prevails, they

build a large canoe, and the Minloven or priest has the boat carried close to each house, and there by his noise he compels all the bad spirits to leave the dwelling, and to get into the canoe; men women, and children assist him in his conjuration. The doors of the house are shut, the ladder is taken out, the boat is then dragged along to the sea-shore, where it is soon carried off by the waves with a full cargo of devils; those malignant spirits are effectually prevented from taking their abode again in the village by a screen made of pieces of cloth, which keeps out of their baneful sight the place where the houses stand. This feast, which takes place at the end of S. W. monsoon, is called by the Nicobarians *Kew Hivi*. In the beginning of the N. E. monsoon all the women are obliged to fast for three or four days. During that time, they dress as mad persons, and go from house to house singing and dancing. The Nicobarians have also in their houses idols of the most ugly shape, representing men and women; some with European dress and some with the scanty dress of the natives. They have short and thin legs, and a large belly, and from their necks hang spoons, cocoanuts, &c.

The Nicobarians have such a high idea of the Europeans, that to them they attribute the creation of their islands, and they think it depends on them to give fine weather, nice breezes, &c.; they are convinced that the Minloven can cure every disease, make people sick, and also deprive them of life. Should any one be suspected of causing death, the villagers would immediately kill him: this has been the case several times. When the French Missionaries were living at Terressa, the villagers went to them on several occasions, saying—"Senhor Padre, give us some rain if you please; our yams are dying; we know you can do it if you like." And on one occasion, the priests were threatened to be murdered if there was no rain. On the following day, fortunately, a strong shower fell during the night, and the people thanked them most cordially. One of the Clergy being on board of their canoe, on his way from Chowry to Terressa, the crew told him—"Senhor Padre, some breeze if you please"; some time after, the wind blowing a little fresh "*basta*," cried they, "it is enough, do not give any more of it, otherwise the boat will be capsized." One day, Gold-mohur, who is the most respected man of the Laxis, a village situated at Terressa, went to the Missionaries, telling them—"You think, perhaps, that the inhabitants of this place are bad people. I will convince you of the contrary; to-morrow I will take all the inhabitants to you, and by examining their hands, you will see that there is not a single murderer amongst them." When I was at Katchall speaking to some of the people about the murder committed on board of vessels, every one of them showed me the inside of their hands, saying—"Is there any spot of blood on them?" These people are convinced that Europeans, by looking into their hands, know if they have been guilty of some crime.

The population of the Nicobar Islands is from six to seven thousand souls. The whole of them live on the sea-shore; their villages, which are surrounded by cocoanut and betelnut trees, are small, seldom more than three or four houses are seen on the same spot. The men have only one wife with the exception of those of Chowry Island. The

women enjoy the privilege of divorcing when they think proper, so, should another man captivate their heart, they send away the first husband, and associate with the man who has been fortunate enough to please them. Not having children, being considered as a curse, in that case the separation always takes place. I saw at Terressa a woman who had been married on that account nine times. It is the custom for young people to live one year as husband and wife before the marriage ceremonies take place. Should they live on good terms, and be happy during that period, then the couple is united in the presence of the villagers and of the Minloven. A feast is given to all the friends and relations; large pigs are killed; those that are invited daub their faces with the blood, &c. Should the husband die, the wife is seldom married again.

The women, during their course, daub the whole of their body with the blood of pigs and fowls; and they drink freely the water in which they have infused several roots. When *enceinte* dancing and singing are not allowed in their village, nor can the relations sell pigs or fowls to make curry. When a child is born, it is a great rejoicing amongst them: they feast for several days. When a person is sick, they hang to his neck young cocoanuts, a spoon, and small carved figures, to amuse the spirit; small baskets filled with betel leaves are suspended to the trees, and the Minloven is sent for. He never gives any medicine, but excites friction on the different parts of the body: he binds the members of the sick in different directions; claps his hands, and makes a great deal of noise. He gives orders to the relations to cut some of the trees, and to tie to the posts of the house some of their branches, with young cocoanuts. Should the person be in his last extremity, the Minloven gives a song of farewell. Friends and relations never cry at the death of a person: their mourning is in the shaving of their heads: the villagers go to the house where the corpse is, and there they drink till they are intoxicated. A coffin is made of a boat cut in two, and, some hours after death, the body is carried to the grave, on which they put cocoanuts and plantains; the Minloven, taking wooden poles, goes to the sea-shore, and fixes them in the sand in such a manner that, when left to themselves, they fall; he then takes them again and throws them in the sea: when he reaches the village, he makes a great noise, and the villagers throw out immediately the ashes they have in their houses. If the dead be poor, a few days after the burial the corpse is taken out from the grave; they bring it to all the houses of the village, and from thence to the place where are the bones of the persons who died before him. They hang the coffin between two trees, six or seven feet from the ground; when the string is rotten, the coffin falls, and the bones are partly eaten by the pigs. Should the dead be one of the captains, the corpse remains in the grave for three or four months. Some people in their best dress go to call relations and friends from the other villages to remove the bones; the pigs of the largest size are killed, and singing, dancing, and particularly drinking, are kept up for several days. When a person dies, the villagers cannot go on that day to the jungle, fearing to be killed by the *hivi* or spirit: they abstain also from the food to which the deceased was partial.

The Nicobarians give credit to dreams, and are much addicted to superstition. They will not cross a jungle carrying any box, nor will they use nails in the construction of their houses. They never bathe alone; nor will they go to the burial ground; nor will they cut large trees in the forest before offering to the spirit who resides there; nor will they eat at the same meal pork and turtle. When in their boats, after drinking the water of young cocoanuts, they are very careful not to throw into the sea the shells. Before they build a house, the Minloven is called to choose the spot, and by different ceremonies, he compels the *kivi* to leave the place. When a new canoe is to be launched, a fire is lighted round it to compel the spirit to quit the boat. These people have the idea that some have it in their power to cause a person's death merely by thinking of it; and should a villager dream that such a one is doing so, there is no other means to escape but by going immediately to another island. The greatest part of persons seen in islands where they are not born have been compelled to leave their own on this account. If the dreamer mention his dream to no one but to the heads of the village, the sentence is passed, and the eaters of men, as the Nicobarians call them, are taken and fastened to a tree close to the village, leaving them to perish by hunger: no friend, no relative, would give them anything to eat. Some years ago a young woman of Terressa was starved on that account, and it was but on the seventh day that death put a stop to her sufferings.

The Nicobarians never use anything taken from a vessel on which a murder has been committed before the Minloven has, by prayers and supplications, purified the articles; being under the persuasion that, if they did not resort to such expedients, the spirit of the murdered person would inevitably kill them.

In Nicobar, every one is his own master, even children. Persons who have been in foreign countries are respected, and have some authority over their countrymen. Such is the case also with aged people, and persons who have a great number of cocoanut trees and many pigs. But there is not a single person in all the Nicobars who has it in his power to exercise control over, I will not say one of the islands, but even a single village; should a person be guilty of a grievous offence, or repeated thefts, he is compelled to leave the island. Some years ago a person who had been sent out of Terressa for robbery returned thereto, and as he was following again his old trade, he was stabbed to death by the order of the head-people of the village. I think that such occurrences are very rare, as it appears that there is a general good understanding and union amongst them.

The prevailing food of the Nicobarians are pigs, poultry, turtle, fish, cocoanuts, yams, *ika*, and fruits.

The pigs, which appear to be derived from the Chinese breed, being fed on cocoanuts, are very fat, and their flesh is of a superior flavor. Although they are to be found in every island, Terressa is the place where they abound. Some of the villagers of Laxis have as many as sixty or seventy. They are let loose in the jungle; the owner calls them every

day by striking on a plank with a stick; on their hearing the noise, they run instantly in the direction of the shed where the cocoanuts are kept. After they have fared on the allowance, which consists of two cocoanuts for each, they return to the forest. Although there are many sheds to which the pigs are called in the same manner, those brutes, however, never mistake the place where they have to look for their food. This mode of living gives to those animals the appearance of wild pigs. I saw some of the young ones variegated, reddish, and whitish. A large pig is sold for four or five rupees; but if cloth or knives are given in barter, then it may be had at half that amount. White pigs are very scarce. I saw two at Terressa, and the owners would not part with them on any account. Should the authors of culinary books require a new system for cooking meat, I will gratify them with a receipt on that *imaigor* in use amongst the Nicobarians. Having killed the pig, daub your face with its blood, cut the animal in pieces, put it on the fire for one or two minutes until the hair is burned off, then take off instantly and eat.

The fowls are scarce, and, if bought with silver, they give but two or three for a rupee; but the same number may be had for a common table knife, old or new.

Although there is plenty of fish about the islands, the natives, having no nets, catch but very few. Their only mode of fishing is with a basket and harpoon. Great skill is displayed both by old and young in using this instrument, seldom missing their aim. A part of the fish caught is generally eaten raw on the spot, and the remainder is taken home to the family to be eaten in the same plain manner.

Different species of turtle are found at Nicobar; amongst them is the imbricated turtle which furnishes the tortoise-shell: the flesh being unwholesome cannot be eaten; but it is not the same with the green turtle, whose flesh supplies good food, and whose eggs are fine eating; they are particulary common at Car-Nicobar. The natives take advantage of the time when the turtle deposit their eggs in the sand; during the night they approach them slowly, and, turning them on their *carapace*, they leave them in that position till next day, when they carry them home. These turtles lay about one hundred eggs at a time.

The group of the Nicobar seems to be the land of cocoanut trees. I have never seen any country where they grow so well and in such abundance; the water of the young cocoanuts is superior in flavor to any I have tasted elsewhere. If Providence had not provided those islands with these useful trees, I know not what would become of the inhabitants; and I am sure that the greatest punishment which could be inflicted on them would be the cutting down of these trees, on which they mostly rely for their subsistence. Having no rice, the nut is its substitute, and the cocoanut water is their general drink. Being very lazy, they never climb up the trees to get the ripe fruit, but let them fall of themselves, leaving them at the foot of the tree till they are wanted. The only thing which can induce them to climb up is to get the young cocoanuts, in order to obtain the water to drink or the

toddy, which, when fermented, is an intoxicating liquor; there is no house without a supply of it, and the first thing that is offered to a visitor is a cocoanut filled with that stuff. Men and women indiscriminately climb the trees, except at Chowry, where none but persons of the fair sex enjoy that privilege.

The Nicobar yams have a particular taste and flavor, which they lose in part when transplanted in other countries. Although very little trouble and care is necessary for their growth, yet the Nicobarians, through carelessness and indolence, allow themselves to be deprived of that wholesome root during six months in the year.

The *eka*, or *ika*, or *milor* as it is called by the Portuguese, is a fruit of the size and shape of the jack; weighing from ten to fifteen pounds. It grows on a tree which is from twenty to thirty feet high, the trunk is *funiliformis, foliis pinearis.* The fruit being boiled, the edible part is separated from the filaments with a shell, which, for greater convenience (the women alone perform that work), is held between the toes. This being done, they make it into loaves, weighing from ten to twelve pounds each; it will keep for several months. When the natives take their meals, they cut a slice of it, which, being mixed with the kernel of the cocoanut, affords them substantial food. This bread resembles much in taste and colour the sweet potatoe. These trees grow in all the islands.

The fruits the most common are plantains, *papayas,* and jacks. I have seen some oranges and sweet-lime, but of an inferior quality. There is scarcely any marked difference in the soil of the various islands of the group, and therefore what grows in one of the islands would equally be found growing in the other. To certain islands, however, is allowed by natives the privilege of growing certain articles, which is denied to the other; thus, Nancowry is the only island in which paddy can be sown, &c. These restrictions extend not only to planters, but affect also tradesmen: for instance, boats are to be built at Nancowry; earthen pots are to be manufactured at Chowry; lime is to be burnt at Car-Nicobar. The islanders are obliged to have recourse to the above-mentioned places for those articles. This practice seems to be the result of a rather sound policy, the object of which is to establish and keep up an uninterrupted intercourse between the people of those various islands. Who would have suspected the Nicobarians capable of so wise a political institution!!!

The Great Nicobar is remarkable for the height of its hills rising in succession and covered with thick jungle. The inhabitants are few in number, and from their having an almost continuons intercourse with the Malays, some of them are tolerably acquainted with their language, The Captain of the Steamer *Ganges* paid a visit to that island, and, having anchored his vessel in the bay on the S. E. side of the island, proceeded in his boat to survey the river as far as 20 miles up. The soil appeared to him to be very rich, particularly on the left side. He saw some deserted huts and a few plantations of cocoanuts. In some places the river was very wide, and he never found less than two

fathoms of water. He reached a place where there was a fence, about two feet high. A shed was erected inside, but the inmates having it appears heard the noise of oars, had all fled: on the fire was *ika* half-boiled, not in earthen pots as used by the Nicobarians, but in the broad and thick leaves which surround the betelnut, made in the shape of a pot. In the same enclosure were also pigs and fowls.

The interior of this island is inhabited by a race of people distinct from those of the Nicobars. It is said that this tribe is barbarous, and much inclined to warlike excursions to the great annoyance of their neighbours; they are of a dark complexion, and have curled hair. It is a great pity that we know so little about a people who, having had hitherto no intercourse, nor the least communication with any other race, and being left to their own resources, could give us an idea of what man is when he has no other guide for his conduct, but the dictates of his vitiated nature. This tribe, with a dark complexion and curled hair, whether they are Papuans or Andamans, is a question which no one could answer, except a person who had seen them both. Some persons have been brought from the Andamans to Penang, and no doubt has ever been entertained but they are unquestionably of African extraction. I had occasion to see at Nancowry a man from Mozambique, who had seen several times persons from the Andamans, and who assured me that they were people belonging to the same race as himself. It is not to be supposed that the above-mentioned person could have confounded two races so distinct as are the Africans and the Papuans. The hair of the last mentioned race grows in small tufts, each having a spiral twist. The forehead rises higher; the nose is more projecting from the face; the upper lip is longer; the lower projects forward from the lower jaw to such an extent that the chin forms as it were no part of the face. This description given by Sir Everard Home forms a striking mark of the dissimilarity between the two races.

The Little Nicobar has a beautiful anchorage; the Steamer *Ganges* anchored opposite to a sandy beach close to Pulo Milu, at a short distance from the sea-shore. There is between the hills a beautiful valley, irrigated by a small river running from the south to the north. At the mouth of that river is a cave, in which numbers of the *collocalia fuciphaga* build their nests; the bottom of the cave is filled several feet deep with guano. Coal has been found towards the northern point of the island; but it appears that the product would not pay the expenses of working it. The hills which cover the interior of the island may be estimated from one thousand to twelve hundred feet high. The sea slugs called *trepang*, which is such a delicacy for the Chinese, abound in the harbour.

The beauty of the harbour, the safety of the anchorage, and the fertility of the soil, induced the Danish Government to choose this island for their head-quarters. The Steamer *Ganges*, which was bought for the use of the new colony, went in December last to Penang in order to procure coolies. Of the forty Chinamen taken on board, a part of them were unfortunately opium smokers; the consequence was that, when the supply of that drug which they had brought from Penang

was exhausted—being unable to procure any at Nicobar—they had no strength to go on with their work. After lingering for some time, they fell victims to the deadly effect of that most pernicious habit. The remainder of the Chinamen have been employed in clearing a place for the stores, and making roads; they have planted samples of sugar-these coffee, nutmegs, &c. It appears that the luxuriant growth of cane, plants exceeds the planter's expectation.

I entertain very little doubt that the Danes will finally succeed in colonizing the Nicobar Islands; but great patience is required, and much money is to be expended for clearing the land. The fever, which attacks the natives, and particularly foreigners trading thereto, especially when they sleep on shore, is to be no doubt attributed partly to the dense thick forest covering the ground. Of the four French Missionaries who lived at Terressa, one died of fever soon after his arrival; a second one, after having been laid up with the same disease for more than a year, breathed his last at Mergui. The two surviving are still lingering under the same complaint, although they have left Terressa almost two years since. The natives of Car-Nicobar when attacked with fever, rub themselves all over before a fire with hog's lard. I do not know how far this remedy, which affords relief to those islanders, would succeed with foreigners.

Should the Danish Government wish to go on with the colony, the best plan, in my humble opinion, would be to employ Malays or Siamese to clear the forest; they are the people most fit for that purpose; the Chinése are most certainly the best cultivators amongst the Asiatics, but not being accustomed to the clearing of jungle, their work in that line would not compensate for the high salary which they receive. They, being accustomed to live on a good and abundant food, would certainly prove a heavy burden on a new settlement, such as the Nicobar, where provisions are, with so great a difficulty, to be had. The planters of Penang, having been annoyed by the importunities of the Chinese laborers, who are never satisfied with their present condition, have partly employed laborers from the Coromandel Coast; these coolies are a hard-working people, receive low wages, and are not impertinent towards their employers as the Chinese commonly are. It would be very easy for the Danish Government to procure laborers from the Coromandel Coast; rice and salt fish being their food, they would be a lesser burden to the colony.

Should Government take a couple of hundred Malays about the end of October, they would be able to cut down a considerable extent of the forest before the end of January; then their services might be dispensed with. In March or April fire could be set to the wood, then fully dried up; this being done, the planting could commence. There is very little doubt but the clearing of the jungle will put an effectual stop to the Nicobar fever. When the English took Arracan from the Burmese, that place was for some years called the grave of the troops; but the jungle having been cleared up to a considerable distance from the station, it is at present as healthy a place as any station in Bengal.

Province Wellesley, on the western coast of the Malayan Peninsula, was so unhealthy twenty years ago, that a European would not venture in the interior without being almost certain of catching the jungly fever: but the province having been in part cleared of jungle, it is considered by Europeans to be as healthy as Penang Island.

To colonize the Nicobars, a good manager is absolutely necessary, and much money must be expended at the commencement; and as all depends on the beginning, so the Government should be prepared to supply the settlement with means adequate to the undertaking. Should the establishment be properly managed at first, there is no doubt but the Malays and Chinese would go and settle there with their families, and cultivate the ground on their own account, as they do in English settlements; but on the contrary, were the Danish Government to go on slowly to the work, then the present settlement will be a failure, as was their first one at Nancowry. Nothing is to be expected from the natives; they are too lazy; they will never work except by compulsion.

The Nicobarians are averse to Europeans settling in their islands; this I heard from the most respectable of the islanders, and but lately they gave a proof of it by making attempt on the Government establishment. The natives being without courage, and not having among them a person who could succeed in forming them into one compact body and direct their united efforts, little fear is to be entertained about their future desultory attacks.

The sight of the S. W. entrance to Nancowry Harbour affords a magnificent spectacle, and inspires the soul with emotion and pleasure. The passage, which is about one hundred feet wide, has on each side a bare and rugged rock, having in the centre an opening much resembling the side gates of a citadel; these rocks lie adjacent to the hills rising from two to three hundred feet above the level of the sea, and are covered with a fine and evergreen vegetation. On entering the harbour, which appears as a large basin, the eye meets with some hamlets surrounded by cocoanut and betelnut trees; many of the houses are built like the Malay huts, and some have the shape of beehives. The whole circumference of the harbour is lined with hills varying in shape, size, and height: some rising in the form of inclined planes, some towering perpendicularly, and some having several escarpments; these hills, from four to five hundred feet high, are covered with luxuriant vegetation. In vain the eye seeks for cultivated ground to embellish the scenery; nothing is to be seen but the savage grandeur of a vigorous vegetation, which characterises this part of the world. The harbour communicates with the sea by another entrance towards the east, which is the general passage for vessels to get in: there stands a village called Malacca; when vessels anchor close to it, both of the passages may be seen.

The inhabitants of this village, which has ten or twelve houses, are far from making a favorable impression on the visitor. By their features the Nancowry people resemble the Malays so much that they appear to have some of the Malay blood in their veins, and there is no doubt that,

if they rightly deserve to be considered as the wickedest amongst all the inhabitants of the group, it is owing chiefly to their frequent intercourse with the Malays. Some days previous to my arrival at Malacca, a young East Indian, William Goldsmith, who had resided there several years, died in that village. On enquiring about the particulars of his death, I was far from being satisfied with their contradictory, and, in all respects, unsatisfactory answers. This young man must have known a great deal about the doings of the natives: it is not, therefore, improbable that his death had been hastened by the suspicious islanders who feared he might make known their mischievous deeds. In the same village an African Christian, named John, who speaks tolerable Portuguese, and was employed as gunner by the Danes when they were in that island, came on board, dressed with a miserable rag which the natives wear around their loins; he had for a neckcloth a fine pantaloon, which he received a few days before from one of the Danish Officers. I put several questions to him concerning the inhabitants, but in vain; he only told me that the natives were very good, with the exception of the inhabitants of the False Harbour.

The first Danish settlement was at Carmorta, opposite to the village of Malacca; the remains of a few brick-houses may be seen still on a rising ground. I do not think that the spot was well chosen for an European settlement, the harbour being surrounded on every side by hills with the exception of the two entrances. This site must have proved unhealthy to the settlers; the low ground is very sandy, and the soil appears to be inferior to that of Nicobar.

Terressa Island appears to be ill-adapted to be the head-quarters of a colony; the south of the island being an open place without a harbour, is too much exposed to be a safe anchorage; the surf is tremendous, and the only place for landing is a small passage amongst sweeps. The breakers in the N. E. monsoon are also terrific. The northern part of the island is partly protected by Bompoka, a small island, distant two miles from Terressa, the hills of which rise suddenly from the beach; but that side being exposed to an easterly gale, the anchorage is not safe. The low ground of Terressa is very sandy, and although the hills are composed of red clay, they are covered in part by a coarse grass called *lalang*, and the vegetation does not appear to be so strong as in some other islands. Lackshee is the largest village in the island: it is situated towards the south, and contains seventeen huts, numbering one hundred and four persons. It is in that village that the French Missionaries dwelt, living in a native hut. The islanders would not allow them to build a house, although they had brought the materials from Penang, being under the ridiculous impression that, if a house were built different from theirs, they would all inevitably die. The Car-Nicobarians have not those prejudices, having allowed the Missionaries to build a house in 1836 in any shape they thought proper.

The Missionaries entertained at first great hopes of converting the natives; the islanders visited their houses frequently, and though they did not appear to take much interest in their instructions, it was

thought that this might be attributed rather to the unsteadiness of their character than to any determined aversion to their becoming Christians.

The priests, on becoming better acquainted with their character, found that the trifles they had brought with them to the Nicobars were partly the cause of the seeming affection shown to them at the beginning. A school was opened by the Missionaries; as children do what they please, and parents having no control over them, the school was attended only by a few, and that for a very short time, so that not a single boy could derive any benefit from it.

The Jesuits, about two hundred years ago, were the first who brought to those islanders the light of the Gospel: their exertions were crowned with success at Car-Nicobar, but these Missionaries, being anxious to give the same benefit to the other islands, went thither on that purpose. Their zeal was rewarded with the crown of martyrdom. The neophytes being left to themselves fell again into their former Paganism.

In the beginning of this century, an Italian clergyman was sent from Rangoon to Car-Nicobar; his zeal, charity, and simplicity of manner in his living, gained him the hearts of the natives; several of them were baptized; and there is very little doubt that the whole island would have been converted had he not caught the fever, in consequence of which he had to return to Rangoon, where he died shortly after his arrival.

In 1835, two French clergymen were sent by the Bishop of the Straits to the same island. The natives were shy at first, but, after a few days of intercourse, they showed a more friendly disposition, and allowed them to build a house. The Missionaries found that their frequent communication with foreigners was far from having improved their manners; they were no more that simple, innocent and harmless people as they were formerly represented to be. When the natives became more acquainted with the Missionaries, they paid them frequent visits, bringing with them trifling presents, such as yams, fowls, &c.; some of them being anxious to learn the Christian religion, went every evening to their house to be instructed. After a few months' residence there, the priests had gained so much the affection of the people that their house was crowded every day, and they were permitted to visit all the parts of the island without excepting even their inland establishments, where they keep their most valuable articles, a privilege which had never hitherto been granted to any foreigner. Everything went on prosperously, until the arrival of a Cholia vessel, whose *Nakoda*, by misrepresenting the character of the priests, withdrew from them the confidence of the natives. He told them that the Missionaries were English spies sent there for the purpose of enquiring into the produce of the country, and that, in consequence of the information furnished by them, that Government would soon take possession of their islands. The Nicobarians having given credit to this tale, would hold no more communication with them, nor sell them any provisions. Two of the

natives who continued faithful to the Missionaries told them that the people were so exasperated against them on account of these false reports that, if they remained any longer, there was no doubt but they would become victims to their rage. As the Missionaries could not succeed in convincing the islanders of the untruth of the report, and seeing that any further stay among them was useless, they quitted the place, having remained in the island about a year. It is impossible to form an adequate idea of the hardships which the Missionaries underwent during their stay in the Nicobar Island. They were deprived of every comfort of life; their food frequently consisted of nothing but cocoanuts and yams. The Rev. Mr. Lacrampe, who spent the S. W. monsoon at Chowry, had no rice to eat during his stay, and had it not been for a native, who brought him one yam every other day, and which he was obliged to share with a servant boy, he would have starved. This gentleman being attacked with fever, cocoanut-water was the only drink he could procure to quench his burning thirst. The Rev. Messrs. Chopard and Borie, soon after their arrival, were taken ill at Terressa, and so seriously, that they could not render each other assistance: both were lying on mats in the same place without remedy, and receiving no assistance from the natives, but the hand of Him who had guided their steps in that foreign land, supported them amidst such trying afflictions.

At last Mr. Borie, though of a strong constitution, fell a victim to repeated attacks of fever. On that very day, in the evening, Rev. Mr. Chopard was so very ill that he was not at first aware of the death of his companion. On the following morning, having recovered his senses, he then only found that his friend was but a corpse lying by his side. On the same evening the natives removed the mortal remains to the grave they had prepared; and he, though scarcely able to creep along, attended the funeral. A worldly-minded person might mistake this pure zeal of the Missionaries for blind fanaticism; but their conduct cannot but be admired and praised when we consider and reflect on the fact that these Missionaries were led by no possible earthly motives, but guided solely by the earnest desire of making known the saving truths of the Gospel to their fellow-creatures. Nothing but a belief grounded on the strongest evidence, and deeply rooted in their souls, would have led them to the field of their labors, and supported them through the severest trials.

Chowry Island, seen from the east, presents a rugged and abrupt rock, resembling the walls of a citadel or old castle. The other part of the island is flat. Although cocoanut trees grow well there, the quantity is not sufficient for the support of the inhabitants, in consequence of which many are obliged to proceed to other islands. The emigrants being generally men, it follows that the female sex are more numerous; I suppose this is the cause why the privilege of having several wives is allowed in that island. No fresh water is to be had at Chowry, the inhabitants, therefore, have no other drink but cocoanut-water. Vessels or boats touch seldom at Chowry, because there is no safe place of anchorage, in consequence of which the natives are the

poorest among the Nicobarians; and when they have to buy or sell any articles, they go to the other islands where the vessels are lying.

In all the group of the Nicobars are found, more or less, birds nests, *trepang*, ambergris, and tortoise-shells. The first vessel that touches there, when the S. W. monsoon is over, might make good bargains with the natives, provided the purchasers be well acquainted with the quality of the articles brought to them.

The *Collocalia fuciphaga* is smaller than the common swallow, brown above, and whitish below. The nest is a whitish gelatinous substance, arranged in layers and secreted by the salivary glands of that species of swift. These birds, common in the Archipelago of Mergui, the Nicobars, &c., build their nests in the cavity of the rocks, where it is most difficult and perilous to have access. The nests are of six qualities; the *first*, of fine whitish color, is obtained by taking the nest before the swift has laid its eggs. This quality is sold at Penang from 40 to 50 dollars the katty. The *second* quality, of a brownish color, is obtained by taking the nest when the bird has laid her eggs. It is sold at Penang at from 20 to 30 dollars the katty. The *third* quality is of a dark color, mixed with blood and feathers; it is obtained by taking the nest when the young birds have flown; the price of this sort is very low. The Chinese say that when the nest is taken before it is completed, the swift makes another but of an inferior quality, and it appears that the bird exhausts itself in building the second, the next being spotted with blood. The manner in which the Chinese prepare the nest is to steep it in water during one night; then with great trouble they clean it; this being done, they boil it in water, to which they have added some sugar-candy, till the whole forms a jelly: one nest prepared in this manner is sufficient for one person.

Birds' nests being very dear, the wealthy Chinamen only can enjoy this delicacy. The rich opium-smokers take in the morning a cup of it for the purpose of refreshing and strengthening their debilitated frames. Persons attacked by consumption are advised by the Chinese physicians to take these nests; they prescribe the same to those who are reduced by a protracted illness; and I have seen several persons who, having made use of this remedy, declared that they found a temporary relief from this refreshing and nourishing food.

Formerly, both Malays and Burmese procured at the Andamans a considerable quantity of these nests: collecting them themselves, or receiving them from the islanders in exchange for their tobacco, &c. I was told by an old Caffrey, who is still living, that, when young, he had been several times at the Andamans; that the inhabitants were then a harmless people; that they brought on board *trepang*, birds' nests, &c., taking in exchange several articles. The above person attributed the change in their manners to the misconduct of some Malays and Burmese, who, taking advantage of the time in which the natives were on board their vessels, tied them up and carried them off as slaves. It is a fact that several persons, at different times, have been brought to Rangoon as well as to Penang. How could it be expected that the

natives, after such treatment, would keep the least intercourse with foreigners? At present their antipathy to strangers has risen to such a degree that it is most dangerous to approach their shores. It is said that the Andaman people are cannibals; but the assertion is hitherto destitute of unquestionable proof; and it would appear rather strange that a people, who are reported to have been harmless 40 or 50 years ago, could have fallen into such a state of barbarism in so short a time. Be that as it may, it is certain that peaceful persons who have called at their island to procure a supply of water, have been murdered by the natives without provocation.

Ambergris is found in all the group of the Nicobars; and some years in such quantities that this article is scarcely of any value in these islands. In the various islands I visited, the natives brought me ambergris for sale; but its having been mixed with the wax of a small bee, which establishes itself in the trunk of decayed trees, it was of a very inferior quality. The genuine ambergris is sold very dear at Penang. The Chinese and Burmese use it for medicinal purposes.

The *trepang*, or *biche-de-mer*, is a leech-like animal, from fifteen to twenty inches long to four or five inches broad. Some are of a reddish-brown, and some of a dark-brown color. These animals lie in the sand or coral rocks without showing any appearance of animation. The Malays have two ways to catch them, first by spearing, and second, when the water is not too deep, by diving and taking them with their hands. The Malays are, I think, the only people who prepare the *trepang*. They start for the Nicobar Islands in November and December, and remain there till the end of April. The way of preparing these leeches for the market is to boil and dry them in the sun or at the fire; they are then packed up with lime, brought to Penang, and sold to the Chinamen, who are the only people, I think, fond of that *delicacy*. The price varies according to the quality; some *trepangs* are sold at the rate of 30 dollars per picul, some at a lower price. The Chinese alone have the skill to find out a difference between the various kinds of *trepangs*. A Malay boat made last year 1,500 dollars by merely collecting *trepangs*.

Having been in the different islands for a short period of time only, I could not ascertain what are the different species of trees growing there; but judging by those I saw, I think they are, with a few exceptions, of the same species as those growing at Penang; the dammer tree particularly is very common. The Overseer employed by the Danes at Little Nicobar says that teak is found on the island, but I am inclined to believe that it is a mistake.

The soil on the sea-shore of the Nicobars is sand, coral, lime, and vegetable mould, more or less thick. The hills are red clay, as the Penang hills; the rocks are limestone, sandstone, clay, and slate. As rain seldom falls in the months of December, January, February, and March, I do not know how far the plantation of spices would succeed.

When at Nicobar, I collected different species of birds which were sent to the Calcutta Museum. I saw at Katchall and at Little

Nicobar monkeys of the species *Macacus cynomolgus*. The natives told me that several species of snakes were found in the island, some being very venomous. The *boa constrictor* is found also in the islands, particularly at Terressa.

The shells which I collected were the following:—*Ammonites virginea, conus generalis, cypræa, exanthema, cassidaria chiasphoras, ceritheum, murex tenuispina, pteroceras scorpio, anodon dipsus, cardita caliculata.*

Before concluding this notice, I beg to return my most sincere thanks to Captain R. Ashland, commanding the Danish Steamer *Ganges*, for having afforded me, with the utmost kindness, the means of visiting several of the islands above-mentioned, as also for the unceasing kindness showed to me when on board of his vessel, both by him and his officers. I was seventeen days in the group, and I am indebted for the foregoing detailed accounts partly to the natives themselves, but chiefly to the Rev. Mr. Lacrampe, who accompanied me to the Nicobar Islands. As this clergyman had previously resided for more than one year on these islands, and was tolerably well acquainted with the language of the natives, I have unhesitatingly relied on the information he so readily gave me.

It is as well to add that, in mentioning the harbours, their entrance, &c., I may have mistaken with regard to their exact position, but I beg the reader to bear in mind that I am not a seaman, and therefore no one can expect from me that exactness in such matters which can be furnished but by persons brought up to that profession, and who are supplied with the requisite instruments.

SMALL VOCABULARY OF THE NANCOWRY LANGUAGE.

Inconhay	Man.	Inkman	Chin.
Maial	Young man.	Boyalkiah	Beard.
Ungcan	Woman.	Kolalah	Neck.
Uiah	Girl.	Uhian	Belly.
Incam	Wife.	Kanathoi	Hand.
Koi	Head.	Bhoolo	Thigh.
Inkoi	Hair.	Anhnan	Leg.
Nan	Ear.	Huphala	Foot.
Moi	Nose.	Kahmala	Sea.
Lail	Forehead.	Rak	Water.
Olmat	Eyes.	Aros	Rice.
Mahnoey	Lips.	Gnhuat	Cocoanut.
Kanap	Teeth.	Kampei	Ambergris.
Kealatat	Tongue.	Akai	Bird's nest.
Khaha	Moon.	Hookgnok	Eat.
Han	Sun.	Phim	Drink.
Lomalay	Star.	Ahochoo	Go.
Hnee	House.	Kathara	Come.
Hahoha	Fire.		

NUMERALS.

Hing	One.	Hakiat	Seven.
Hahoo	Two.	Infuan	Eight.
Looha	Three.	Inhatta	Nine.
Fuan	Four.	Lam	Ten.
Thanin	Five.	Hingian	Eleven.
Thafocl	Six.	Loohagain	Twelve.

Notes on the Fauna of the Nicobar Islands.—By E. BLYTH, ESQ., *Curator of the Museum of the Asiatic Society.*

THE vertebrated fauna of the Nicobars, to judge from the collection with which Mr. Barbe has favored the Society, and also from a nearly parallel series of specimens collected and presented to the Society by Captain Lewis, would seem to be remarkable for the paucity of terrene species; while a large proportion of such as do occur are apparently peculiar to the locality.

MAMMALIA.

Of this class, I have examined four species only, of which three are bats.

Macacus cynomolgus: which is also an inhabitant of the Tenasserim Provinces and Malayan Peninsula, but in Arracan is represented by the allied *M. carbonarius.* I have been presented with two living specimens from the Island of Timor, which do not appear to differ from those of Malacca; the species being everywhere subject to some individual variation.

Pteropus edulis: Pt. javanicus, Horsf., &c., &c. Three specimens are alike remarkable for having the throat and front of the neck black, the head blackish, the nape dull reddish-brown, the back shining black, flanks and vent dull black, and the rest of the under-parts dull reddish-brown, much paler in the centre.

Cynopterus marginatus, (B. Ham.) Inhabits India generally, as also the countries eastward of the Bay of Bengal to Malacca, and the Great Eastern Archipelago.

Hipposideros murinus, (Elliot): vide *J. A. S.* XIII, 489. Identical with specimens from Southern India, and from the Malayan Peninsula.

In addition to the above, Captain Lewis informed me of a large monkey, evidently a *Presbytis* (vel *Semnopithecus*) from his description, of which he vainly attempted to obtain specimens, from its remarkable wildness; also of a large squirrel, distinct from any in the Society's Museum, and therefore probably new, considering the locality.

Captain Lewis likewise obtained, in the immediate vicinity of the Nicobars, an example of *Delphinorhynchus rostratus,* F. Cuv., as identified from its skull which he has presented to the Society, and which entirely accords with that of a specimen captured in the Red Sea.

Sus.—The Nicobarian pigs appeared to have been derived from the Chinese domestic species, turned loose upon some of the islands.*

It can scarcely be doubted, however, that several additional species of mammalia remain to be discovered, as particularly bats with probably more squirrels, and at least two or three species of small *carnivora,* and perhaps *insectivora.*

* It may be here remarked that Captain Lewis has himself turned a pair of *Cervus axis* loose in a locality where they are likely to propagate.

Palæornis caniceps, nobis, ante pp. 23, 51. Captain Lewis obtained a living specimen of this bird, with the wings and tail mutilated by its native captor. Dr. Cantor has another and very fine specimen, evidently a female, with black beak, from the Malayan Peninsula.

P. erythrogenys, nobis, ante p. 23. Specimens of this bird were procured both by Mr. Barbe and by Captain Lewis; and a living male was given by the latter gentleman to Mr. Halfhyde, of the Preventive Service, who, when it died, presented it to the Society. This individual was in far more beautiful plumage than the specimens previously examined; it measured eighteen inches and a half in length, of which the middle tail-feathers were ten and a half; expanse of wings twenty-two inches and a half; and closed wing seven inches and five-eighths: irides dull greyish. The cheeks and ear-coverts continued forward to the beak, are of a beautifully bright cherry-red, devoid of the lake or "peachblossom" tinge prevailing on the same parts of *P. malaccensis*, and which, in the latter species, is continued round the nape: the crown also is not of the deep emerald-green of that of *P. malaccensis*; the occiput and nape incline to light straw-yellow; and there is a well defined black line from the nostril to the eye; all which combine, with its superior size, and other minutiæ that might be pointed out, as the absence of red above the ear-coverts, to distinguish it from *P. malaccensis*. Indeed, it holds much the same relationship towards that species, which *P. alexandri* does towards *P. torquatus*; and *P. caniceps* stands in the same position towards *P. pondicerianus*; *P. schisticeps*, also, towards *P. cyanocephalus*.—*P. erythrogenys*, so far as we are yet aware, is peculiar to the Nicobar Islands, where it occurs abundantly.

Bulaca seloputo, (Horsfield): *Strix pagodarum*, Tem. Captain Lewis informed me of a very beautiful owl which he obtained, but the specimen was lost through the carelessness of a servant: he could not recognise the species among the fine collection of owls in the Society's Museum, but identified it positively from a Malayan specimen belonging to Dr. Cantor. The present species has been much confounded with its Indian representative; which latter has been referred, not very satisfactorily, to *Strix sinensis*, Lath. A very large white eagle was also shot by Captain Lewis, but he could not succeed in penetrating the very dense jungle into which it fell: this was probably *Blagrus dimidiatus*, (Raffles.) *Todiramphus occipitalis*, nobis, ante pp. 23, 51. Peculiar, so far as has been yet observed, to the Nicobars.

T. collaris, (Scopoli and Swainson): *Alcedo chlorocephala*, Gmelin. Nicobarian specimens of this bird are remarkably brilliant, with much less of the green tinge than usual upon the crown and back.

Merops philippinensis. Found also throughout India, and in the Malayan Peninsula and Archipelago.

Collocalia fuciphaga, (Thunberg) vide p. 22, ante.

Gracula javanensis, vide p. 31, ante. Inhabits the southern islands only.

Sturnia erythropygia, nobis, ante, p. 34. Hitherto observed only upon the islands.

Calornis affinis, A. Hay, ante p. 36. Upon the average this bird is less brightly glossed than *C. cantor*, of the Malayan Peninsula and Archipelago. It was observed by Captain Lewis in the central and southern islands.

Nectarinia pectoralis, Horsfield; *N. eximia*, Temminck (nec Horsfield.) Inhabits also the Malayan Peninsula and Java, but in the Tenasserim Provinces and in Arracan is represented by the allied *N. flammaxillaris*, nobis.

Zosterops palpebrosus, (Tem): *Sylvia annulosa*, var. A. Swainson. This species inhabits the hilly parts of India, from the Himalaya to Ceylon inclusive, and also those of Arracan and Tenasserim: but I have never seen it from the Malayan Peninsula, and it is represented in Java and the Philippines by *Z. flavus*, the *Dicœum flavum*, Horsfield. The specimen described as *Z. nicobaricus*, *J. A. S.* XIV, 563, would seem to be merely the young; though I have never seen an Indian specimen in corresponding plumage. The Society has, however, subsequently received Nicobarian specimens in the ordinary dress of *Z. palpebrosus*.

Oriolus macrourus, nobis, ante p. 46. A very distinct species, observed only in the central islands. I may here remark that, since my synopsis of this genus was written (*loc. cit.*), I have discovered that females of *O. melanocephalus* very commonly assume the plumage which is generally thought to be characteristic of the adult male; and I greatly suspect that the same obtains in the various other species of Oriole.

Hypsipetes virescens, nobis, vide p. 51. ante. Inhabits the central islands.

Geocichla innotata, nobis, *MS.* (described in the sequel to my *Notices and Descriptions of New Birds*). Both Mr. Barbe and Captain Lewis procured what I infer to be a female of this well marked species; and Dr. Cantor's Malayan collection contains what I incline to regard as the male. The coloring is considerably more intense than in *G. citrina*, and there is no white upon the wing-coverts; the presumed female only has a white throat, and the scapularies and interscapularies are olivaceous.

Dicrurus balicassius, (Lin.) A specimen of this common Malayan species was obtained at sea by Captain Lewis when nearing one of the islands.

Techitrea—? A species of Paradise Flycatcher, or *Shah Bulbul* of the natives of India, was observed but not obtained by Captain Lewis.

Myiagra cærulea (Vieillot.) Common.

Treron chloropetera, nobis, XIV., 853. A very distinct species, hitherto only observed upon the southern islands.

Carpophaga sylvatica, (Tickell.) Nicobarian specimens seem invariably to differ from those obtained throughout the eastern coast of the Bay of Bengal (from Arracan to the Straits), and also from Java, Sylhet, Assam, &c., all of which are quite similar, in the green of the upper-parts being wholly unmixed with bronze, and the ash-grey of the head, neck, and under-parts having no tinge whatever of vinaceous; the primaries also are devoid of the grey tinge; and the lower tail-coverts are much less deeply tinctured with dark vinaceous. Hence the *ensemble*, when several specimens of each are examined together, is conspicuously different. This species occurs in the central group of islands.

C. Myristicivora (Scopoli); *Columba alba*, Gm: *C. litoralis*, Tem. Both this and the preceding species are very common.

Calœnas nicobarica. Found also in the Andaman and Cocos Isles, in the Mergui Archipelago (according to Helfer), and in the Malayan Peninsula. Two young ones procured by Captain Lewis have the tail green-glossed black, whereas in adults the tail is pure white. The elongated nuchal hackles do not exist in the garb of juvenility.

Chalcophaps indicus. This differs from the Indian race in the deeper ash-color of the nape and bluer vinaceous hue of the under-parts; while the bands on the rump (so conspicuous in the Indian bird, and also in its Australian near ally, *Ch. chrysochloros*) are very indistinct. It abounds in the central islands.

Macropygia rufipennis, nobis, *n. s.* Most closely allied to *M. phasianella* of Australia, but rather smaller in all its proportions and best distinguished by the uniform bright rufous hue of the entire under-surface of the wings, which occupies the whole of each feather except towards its tip. The primaries are also externally somewhat broadly margined with the same. There is really no other difference: but another species, *M. amboinensis*, of Java and the Moluccas, differs only from *M. phasianella* in its much inferior size. Specimens of all three are in the Society's Museum, and there can be no doubt of their distinctness. I have also a living specimen of *M. phasianella*, caught at sea about sixty miles from the Australian coast. It is kept in an aviary with a variety of other birds, and prefers plantain to any other food: so eager is it for this fruit, that of a morning it will alight on a bunch of plantains as the latter is carried into the aviary, and when the plantains are hung up, it combats with the different species of hurrials *(Treron)* and other birds, in a singular manner, to obtain undisturbed possession of the fruit. Its manner is to hover round them, and not exactly to strike with its feet, but to push with them the intruder off its perch, and this it will sometimes repeat two or three times in succession without alighting. It never descends to the ground, except to feed on fruit that may be lying there; yet, though so fond of this aliment, it was fed, when on board ship, exclusively on maize, and in default of fruit will thrive on rice and other grain. This bird is chiefly active in the morning and evening, and scarcely

moves from its perch during the day. Its coo is hoarse, deep, and subdued, a sort of croaking sound, only audible when very near, and resembling 'o-o-o-o-ah' repeated several times successively.* *M. rufipennis* was observed only in the Southern Nicobars.

Turtur suratensis (Lath) *Columba tigrina*, Temminck. Common to India and the Malayan Peninsula and Archipelago.

Megapodius nicobariensis, nobis, ante p. 52. Of this very interesting bird, Captain Lewis obtained the egg and chick, and Mr. Barbe an adult pair, with also two eggs, which latter are noticed in my description of the species. That procured by Captain Lewis was uniformly tinged with reddish-brown, which still further bears out Mr. Gould's description of *M. tumulus* of Northern Australia, the eggs of which he describes to vary somewhat in hue, according to the soil in which they are deposited.†

Demigretta concolor, nobis, *n. s.* This demi-egret was long ago forwarded from Arracan by Captains Phayre and Abbott, and I am assured that it also occurs in Assam. In the Central Nicobars it would seem to be not uncommon. From *D. asha*, (Sykes) it is readily distinguished by its shorter legs; the tarse measuring but three inches instead of three and three-quarters: wing eleven inches, or eleven and a half, in adults; about an inch shorter in the young: bill to forehead three inches and a half, and to gape four and a quarter: middle toe and claws two inches and three-eighths, the claws short and much curved. Color uniform dark slaty throughout; some specimens having a white line on the chin and throat. Adults have narrow lengthened plumes on the back and breast, similar to those of *Ardea cinerea*: the occipital plumes also are somewhat lengthened, as in herons generally; but I have seen no defined occipital crest, and doubt its ever possessing one. Beak mingled dusky and dull yellowish; and the legs appear to have been olive-green.

Nycticorax griseus (Lin) : *Ardea nycticorax*, L.

Strepsilas interpres, (Lin.) Common along the coasts of the Bay of Bengal; and the Society has received a specimen from the Mauritius. One of the most universally distributed of birds.

Totanus hypoleucos (Lin.) Excessively numerous in the Bengal Soonderbuns; and the Society has also received it from Chusan. Of very general distribution throughout Europe and Asia.

Thalasseus bengalensis (Lesson). Nearly allied to *Sterna velox* and *St. affinis* of Ruppell (nec *St. affinis*, Horsf.) to which it would seem intermediate. *St. cristata*, Sw. (nec Stephens), is also closely allied, but

* This bird is since dead; its plantain diet by no means agreeing with it so well as the maize on which it was kept formerly. As for its mode of fighting, I lately saw a pair of doves (*Turtur suratensis*) on the ground, which repeatedly flew up and attacked each other much in the same way.

† Mr. Barbe informs me that this bird is common on all the islands; but that he never saw it perch, as Mr. Gould represents *M. tumulus* to do, in the back-ground of his plate The pair he shot were together upon a hillock, and upon his shooting one, the other did not make off, upon which he killed it with his second barrel.

remarkable for its very pale color. From the European *Th. boysii*, (Pen.) which it also greatly resembles, this species differs in having the bill wholly yellow, and the tail uniform grey with the back. Another allied species, which was procured by the late Dr. Helfer in the Tenasserim Provinces, agrees with the description of *Sterna poliocerca*, Gould, and is perhaps the *St. cristata* of Stephens. *Th. bengalensis* is not uncommon in the Bay of Bengal.

Sterna (?) *melanauchen*, Tem.: figured in Gould's *Birds of Australia*. This species breeds abundantly in the Nicobars.

Another species, common in the Bay, is the *Melanosterna anasthœtus*, (Scopoli), v. *Sterna panaya*, Lath., *St. infuscata*, Licht., and *St. antarctica*, Lesson: and allied to this is a species which is perhaps *St. grisea* of Horsfield, and which was obtained by Prof. Behn, of the Danish expedition, as he was approaching the mouth of the Hooghly. If new, I am enabled by the politeness of that naturalist to subjoin the accompanying description of it.* *Anous tenuirostris*, (Tem.) is also a marine species of Tern, which I have obtained in the Bengal Soonderbuns.†

Phaëton æthereus. The only Tropic-bird (or "Bo'sw'n-bird") I have seen from the Bay of Bengal. *Ph. candidus* abounds near the Mauritius, and *Ph. phœnicurus* towards Australia.

Pelicanus philippensis. The smaller Indian pelican which seems to be the predominating species throughout the Malay countries.

It thus appears that 32 of ascertained species of birds, procured either upon, or in the immediate vicinity of, the islands (which number includes *Bulaca seloputo*, *Dicrurus balicassius*, and *Phaëton æthereus*),

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* *Hydrochiledon grisea* (? Horsfield): *n. s.*? *H. Marginata*, nobis. Resembles *H. nigra* in winter plumage, except in being much larger, and in having the nape (surrounding the black of the occiput) pure silky white, as are also the entire underparts, including the sides of the breast; the mantle is also much paler, and the tail more deeply forked and differently colored. Length, to end of middle tail-feathers, ten inches and a half, or to the outermost a foot; wing nine inches and a half; middle tail-feathers two and three quarters; bill to gape one and seven-eighths; tarse three quarters; middle toe and claw an inch; the webs of the toe more developed than in *H. nigra*. Bill reddish-dusky, redder towards base of lower mandible; the interior of the mouth apparently coral-orange; and legs, toes, and membranes, the same, with black claws. Color above pale ashy, with sullied whitish margins to the acapularies and wing-coverts; a defined blackish band, half an inch broad, extends along the outside of the radius, bordering the upper-part of the wing anteriorly, as in the winter dress of *H. nigra*: crown and occiput black, embracing the orbital region: towards the forehead the feathers become gradually more deeply margined with white, and the forehead and entire under-parts are pure white, extending on the nape: the great alars are silvery-ash externally, except the first, which has its outer web, and half the breadth of its inner web, with the tip, black, tinged with ashy towards the tip and on the inner web; the extent of the dark ashy tip increases successively on the other primaries, the shorter of which have a narrow white border to their inner webs; while the secondaries are tipped externally with the same; the lesser coverts of the primaries, with the winglet, are mostly dusky; middle tail-feathers pale grey, with a whitish tip; the rest white on their inner webs, and successively darker till they become blackish on the outer: underneath the wings and tail appear margined externally with blackish-grey.

† The Society's specimen of this bird is not a very good one; and I can distinguish it neither from *A. melanops* nor *A. leucocapillus*, figured in Gould's *Birds of Australia*.

as many as eight are peculiar to the locality,—so far, of course, as has been hitherto ascertained; for it is likely that most of them inhabit also the northern part of Sumatra, and perhaps the Andamans, and the province of Mergui and its vicinity. These eight comprise several remarkable and conspicuous species, and are as follow:—*Palæornis erythrogenys, Todiramphus occipitalis, Sturnia erythropygia, Oriolus macrourus, Hypsipetes virescens, Treron chloroptera, Macropygia rufipennis,* and *Megapodius nicobariensis.*

Four others exist as varieties, more or less marked, of species met with elsewhere: *viz., Todiramphus collaris, Collocalia fuciphaga, Carpophaga sylvatica,* and *Chalcophaps indicus.*

Of those which are not peculiar to the islands, 21 are known to occur in the Malayan Peninsula (including *Palæornis caniceps* and *Geocichla innotata,* which were discovered in the two localities about simultaneously); and the remaining three inhabit Arracan, and probably Tenasserim—certainly as regards *Zosterops palpebrosus,* the others being *Calornis affinis,** and *Demigretta concolor.* It is probable, indeed, that the whole 24 occur in the Malayan Peninsula, with also some of the remaining 8, which appear to have been hitherto observed only on the islands.

Of the species found likewise in India, the majority are more or less aquatic, belonging chiefly to the zoology of the Bay and its vicinity; such is *Todiramphus collaris,* which abounds in the Bengal Soonderbuns, and along the whole eastern shore of the Bay, but is very rare on the Coromandel Coast of the Peninsula: but *Merops philippinensis, Zosterops palpebrosus, Myiagra cærulea, Chalcophaps indicus* (Ind. var.), *Turtur suratensis,* and even *Carpophaga sylvatica,*† are inland species, which are pretty generally diffused, though the last is much more common in the countries eastward (as Assam, Sylhet, Arracan, and Tenasserim). *Dicrurus balicassius* I have only seen from Nepal, it being the *Buchanga annectans* of Mr. Hodgson: and the remaining species included in the *Fauna Indica* are *Nycticorax griseus, Strepsilas interpres, Totanus hypoleucos, Thalasseus bengalensis, Phaëton œthereus,* and *Pelicanus philippensis.*

Hence the data supplied by the highly interesting ornithology of the Nicobars (so far as we have yet the means of judging) connect those islands with the Malayan zoological province, as their position on the map would indicate; at the same time that they possess several peculiar and remarkable species not hitherto discovered on the neighbouring lands.

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* I have unfortunately retained for the Museum two Tenasserim specimens of *Calornis* not having suspected the distinctness of *C. affinis* from *C. cantor,* until Lord A. Hay called my attention to the fact. *Calornis cantor* is common at Penang; and I may add that Mr. Barbe has just assured me that the Tenasserim species is *C. cantor* and not *C. affinis.*

† The very small specimen mentioned in XIV, 857, proves to have been from the Neilgherries; but whether the race of Southern India is constantly thus diminutive, I am not yet aware.

REPTILIA.

My materials for illustrating this class are rather scanty, although it would appear that the Nicobars possess many species, more especially of *Ophidia.*

Of the *Testudinata,* Mr. Barbe mentions two recognizable, portions of both of which were brought by Captain Lewis, *viz:*—

Chelonia virgata, the edible turtle of the Bay of Bengal, and *ch. imbricata,* the "tortoise-shell" turtle.

Of the *Sauria,* Captain Lewis collected four species:

Monitor salvator, (Laurent): *Tupinambis bivittatus,* Kuhl; *Varanus bivittatus,* Dumeril and Biborn, *Hist. des Reptiles,* III, 486.

M. nebulosus, Gray: *Varanus nebulosus,* Dum. and Bibr., *Hist. des Reptiles* III, 483.

Both of these species inhabit the Malayan Peninsula, and the first occurs abundantly in Lower Bengal. According to Messrs. Dumeril and Bibron, the second also was sent from Bengal by Mr. Belanger; but I have never succeeded in obtaining an Indian specimen.

Calotes ophiomachus, (Merrem,) Dum. and Bibr., *Hist. des Reptiles* IV, 482. This agrees sufficiently well with the description cited, save that the terminal four-fifths of the extremely long tail are white, instead of being annulated with white. I have no Indian specimen with which to compare it. If truly identical with the Indian reptile, the analogy of other Nicobarian species that occur also in India renders it probable that it likewise inhabits the mainland forming the eastern shore of the Bay.*

C. mystaceus, Dum. and Bibr., *Hist. des. Reptiles* IV, 408. The authors cited found this species upon a single specimen received from Burmah. One from the Nicobars accords with their description in all respects as regards structure; but the specific name does not apply. As far as can be judged from the example before me (preserved in spirit), the brilliant colors of which are now little more than indicated, it would seem that the entire head and throat, if not also several of the anterior dorsal spines, had been bright red, or the throat and lower jaw may perhaps have been orange-red: while the body has evidently been vivid green: colors which probably depend partly on season, over and above the changeableness of hue which these reptiles exhibit at all seasons. The Nicobarian specimen is a male, in apparently the full brilliancy of its coloring, indicative of the season of propagation, when no doubt it had the mishap to be secured.

Of the *Ophidia,* I can only enumerate three species—

Python (probably *P. Schneideri*). This was observed both by Mr. Barbe and Captain Lewis; but I have seen no specimen.

* Referring to Merrem's figure, *Hist. Nat. des Reptiles* III, 361, I cannot hesitate considering the Nicobarian species to be the same.

Trigonocephalus cantori, nobis, *n. s.* A typical member of this genus, having 169 abdominal plates, and 214 subcaudal scutellæ; length of one specimen 30 inches. This large one was much injured when it was killed, and appears to have shrunk considerably from drying before it was put into spirits; from which causes it is not easy to describe its markings, but it seems to have been curiously blotched with red—which color is not observable in a young specimen 15½ inches long. Both have a distinct lateral whitish line, bordering the abdominal scuta and ceasing at the vent. Scales slightly imbricated. The young appears to have been dull olive-green above, mottled throughout with a double series of dusky blotches, semi-alternately disposed, with smaller spots and blotches on the sides, below which occurs the whitish lateral line: underparts greyish, from a freckling of minute dusky specks on a pale ground: on the head the markings tend more or less to be obsolete; but a whitish band proceeds backward from below the eye, and in the young is continued upwards almost at a right angle, and there is also a whitish patch posterior to the broad angle of the jaws, but unconnected with the lateral line of the body. The adult appears to be further variegated above, by scattered white spots composed of one, two, or rarely three scales each. The young is proportionally much more slender than the adult, and the triangularity of its head is less strongly marked.

Pelamydes platurus: having a much greater portion than usual of its tail banded; the bands diminishing to festoons anteriorly until they are gradually lost.

The few *Reptilia* here enumerated, do not require any comment: three of them are marine species, *viz.*, the two turtles and the *pelamydes;* but the former are, I believe, more nearly connected with the islands by depositing their eggs upon the shores of them.

Pisces.

The marine zoology of the Nicobars being probably that of the Bay of Bengal, it would scarcely be worth while here to supply a catalogue of well known inhabitants of the Bay, even if I possessed sufficient materials for the task. The fresh water species would possess more interest in the present instance; and of those I have not seen any, either vertebrate or invertebrate, or any land *Mollusca*. Captain Lewis, on nearing the islands, took a flying fish, which is *Exocœtus commersoni;* and in a native hut he found a rudely prepared skin of *Balistes conspicillum*, Schn. (*B. bicolor*, Shaw); he obtained also a fresh specimen of *B. rectangulus*, Schn. (v. *medinilla*, Quoy and Gaymard, and *fasciatus* of Shaw): also a beautiful wholly green parrot-fish, allied to *Scarus gibbus*, Ruppell, Cuv. and Val. *Hist. Poiss.* XIV, 231, upon which Mr. Swainson founds his *Chlorurus, History of Fishes, &c.*, II, 227 (in *Lardiner's Cyclopædia*). Captain Lewis brought also a few specimens, chiefly small fry, from the myriads which (like the *Scarus* last mentioned) resort to the coral-beds; and among these the *Dascyllus aruanus*, (L) Cuv. and Val. V, 325, would seem to be particularly common.

Lastly, he procured three species of salt-water eels, which I have submitted to the inspection of Dr. M'Clelland, whose valuable labors on the very difficult group of apodal fishes require no eulogy from me; and that gentleman has favored me with the following result of his examination of them:—

"Two of them are known species, I think, namely, *Dalophis geometrica*, (Ruppell,) *Fishes of Northern Africa*, pl. XXX, fig. 3, and *Cal. Journ. Nat. Hist.* V 213.—and *Thœrodontis reticulata*, M'Clelland, *Cal. Journ. Nat. Hist.* V. 216, and pl. VII., fig. 1. The third is, I think, a new species, of which the following will be a sufficient description:—

"*Thœrodontis maculata*, M'Clelland. Two rows of distinct dark spots on either side, of an oval or somewhat oblong rounded form, and placed transversely, the rows extending from the head to the caudal extremity: also a row of more elongated spots on either side of the dorsal and anal fins, parallel with the rays.—Obs. This species bears some resemblance to *Dalophis tigrina*, v. *Muræna tigrina* of Ruppell, *Fishes of Northern Africa*, pl. XXX, fig. 2; but is more robust, and the spots are without an areola as in that species, and differently placed."

Invertebrata.

The only terrene species pertaining to an invertebrate class, which I have yet seen from the Nicobars, is the common *Scolopendra morsitans*. Of marine species, Captain Lewis brought a *Loligo*, and various species of *Testacea* common in the Bay: also two species of *Asterias*, and specimens of *Fungia patella*, *Tubipora musica*, and a few other common corals. Of *Crustacea*, he preserved the claws of an extraordinarily large specimen of the common edible crab of India (*Lupa tranquebarica*), with examples of one of the species confounded under *Matuta lunaris*, and a small crab which accords perfectly with the figure and description of *Grapsillus dentatus*, Macleay, in Dr. A. Smith's *Zoology of Southern Africa*; also a *Pagurus*, and a fine specimen of *Palinurus ornatus*, and one of *Thenus orientalis*, with a small *Alpheus*, and one or two other minute *Palemonidæ* which are probably undescribed.

To Mr. Barbe, the Society is further indebted for numerous specimens of mammalia, birds, &c., from Penang, and from the Tenasserim Province of Ye; also from the interior of the Tipperah hills. Among the Tenasserim specimens are a new monkey (*Presbytis humeralis*, nobis), three new squirrels (*Sciurus chrysonotus*, *Sc. melanotus* and *Sc. Barbei*, nobis,—the last being allied to *Sc. insignis*, *M'Clellandii*, and *trilineatus*),—fine specimens of *Ampeliceps coronatus* (p. 32, ante), *Treron viridiformis* (XIV, 849), and various other species of much interest, including several that had only previously been obtained further to the southward in the Malayan Peninsula and Islands.—*Asiatic Society's Journal.*

A short description of Car-Nicobar.—*By* G. HAMILTON, ESQ.

THE island, of which I propose to give a succinct account, is the northernmost of that cluster in the Bay of Bengal which goes by the name of the Nicobars. It is low, of a round figure, about forty miles in circumference, and appears at a distance as if entirely covered with trees; however, there are several well cleared and delightful spots upon it. The soil is a black kind of clay and marshy. It produces in great abundance, and with little care, most of the tropical fruits, such as pine-apples, plantains, *papayas*, cocoanuts, and areca-nuts; also excellent yams, and a root called *cachu*. The only four-footed animals upon the island are hogs, dogs, large rats, and an animal of the lizard kind, but larger, called by the natives *tolonqui*; these frequently carry off fowls and chickens. The only kind of poultry are hens, and those not in great plenty. There are abundance of snakes of many different kinds, and the inhabitants frequently die of their bites. The timber upon the island is of many sorts, in great plenty, and some of it remarkably large, affording excellent materials for building or repairing ships.

The natives are low in stature but very well made, and surprisingly active and strong; they are copper-colored, and their features have a cast of the Malay,—quite the reverse of elegant. The women in particular are extremely ugly. The men cut their hair short, and the women have their heads shaved quite bare, and wear no covering but a short petticoat, made of a sort of rush or dry grass, which reaches half-way down the thigh. This grass is not interwoven, but hangs round the person something like the thatching of a house. Such of them as have received presents of cloth petticoats from the ships, commonly tie them round immediately under the arms. The men wear nothing but a narrow strip of cloth about the middle, in which they wrap up their privities so tight that there hardly is any appearance of them. The ears of both sexes are pierced when young, and by squeezing into the holes large plugs of wood, or hanging heavy weights of shells, they contrive to render them wide and disagreeable to look at. They are naturally disposed to be good-humoured and gay, and are very fond of sitting at table with Europeans, where they eat everything that is set before them; and they eat most enormously. They do not care much for wine, but will drink bumpers of arrack as long as they can see. A great part of their time is spent in feasting and dancing. When a feast is held at any village, every one that chooses goes uninvited, for they are utter strangers to ceremony. At those feasts they eat immense quantities of pork, which is their favourite food. Their hogs are remarkably fat, being fed upon the cocoanut kernel and sea-water; indeed, all their domestic animals, fowls, dogs, &c., are fed upon the same. They have likewise plenty of small sea fish which they strike very dexterously with lances, wading into the sea about knee-deep. They are sure of killing a very small fish at ten or twelve yards' distance. They eat the pork almost raw, giving it only a hasty grill over a quick fire. They roast a fowl by running a piece of wood through it, by way of spit, and holding it

over a brisk fire, until the feathers are burnt off, when it is ready for eating in their taste. They never drink water, only cocoanut-milk and a liquor called *soura*, which oozes from the cocoanut tree after cutting off the young sprouts or flowers; this they suffer to ferment before it is used, and then it is intoxicating, to which quality they add much by their method of drinking it, by sucking it slowly through a small straw. After eating, the young men and women, who are fancifully drest with leaves, go to dancing, and the old people surround them smoking tobacco and drinking *soura*. The dancers, while performing, sing some of their tunes which are far from wanting harmony, and to which they keep exact time. Of musical instruments they have only one kind, and that the simplest. It is a hollow bamboo about 2½ feet long and 3 inches in diameter, along the outside of which there is stretched from end to end a single string made of the threads of a split cane, and the place under the string is hollowed a little to prevent it from touching. This instrument is played upon in the same manner as a guitar. It is capable of producing but few notes; the performer however makes it speak harmoniously, and generally accompanies it with the voice.

What they know of physic is small and simple. I had once occasion to see an operation in surgery performed on the toe of a young girl, who had been stung by a scorpion or centipede. The wound was attended with a considerable swelling, and the little patient seemed in great pain. One of the natives produced the under jaw of a small fish, which was long, and planted with two rows of teeth as sharp as needles: taking this in one hand, and a small stick by way of hammer in the other, he struck the teeth three or four times into the swelling, and made it bleed freely; the toe was then bound up with certain leaves, and next day the child was running about perfectly well.

Their houses are generally built upon the beach in villages of fifteen or twenty houses each; and each house contains a family of twenty persons and upwards. These habitations are raised upon wooden pillars about ten feet from the ground; they are round, and, having no windows, look like beehives covered with thatch. The entry is through a trap door below, where the family mount by a ladder, which is drawn up at night. This manner of building is intended to secure the houses from being infested with snakes and rats, and for that purpose the pillars are bound round with a smooth kind of leaf, which prevents animals from being able to mount; besides which, each pillar has a broad round flat piece of wood near the top of it, the projecting of which effectually prevents the further progress of such vermin as may have passed the leaf. The flooring is made with thin strips of bamboos, laid at such distances from one another as to leave free admission for light and air, and the inside is neatly finished and decorated with fishing lances, nets, &c.

The art of making cloth of any kind is quite unknown to the inhabitants of this island; what they have is got from the ships that come to trade in cocoanuts. In exchange for their nuts (which are

reckoned the finest in this part of India) they will accept of but few articles; what they chiefly wish for is cloth of different colors, hatchets and hanger blades, which they use in cutting down the nuts. Tobacco and arrack they are very fond of, but expect these in presents. They have no money of their own, nor will they allow any value to the coin of other countries further than as they happen to fancy them for ornaments: the young women sometimes hanging strings of dollars about their necks. However they are good judges of gold and silver, and it is no easy matter to impose baser metals upon them as such.

They purchase a much larger quantity of cloth than is consumed upon their own island. This is intended for the Chowry market. Chowry is a small island to the southward of theirs, to which a large fleet of their boats sails every year about the month of November, to exchange cloth for canoes; for they cannot make these themselves. This voyage they perform by the help of the sun and stars, for they know nothing of the compass.

In their disposition there are two remarkable qualities,—one is their entire neglect of compliment and ceremony, and the other, their aversion to dishonesty. A Car-Nicobarian, travelling to a distant village upon business or amusement, passes through many towns in his way without perhaps speaking to any one; if he is hungry or tired he goes up into the nearest house, and helps himself to what he wants, and sits till he is rested, without taking the smallest notice of any of the family, unless he has business or news to communicate. Theft or robbery is so very rare amongst them that a man, going out of his house, never takes away his ladder, or shuts his door, but leaves it open for anybody to enter that pleases, without the least apprehension of having anything stolen from him.

Their intercourse with strangers is so frequent, that they have acquired in general the barbarous Portuguese so common over India; their own language has a sound quite different from most others, their words being pronounced with a kind of stop or catch in the throat at every syllable. The few following words will serve to show those who are acquainted with other Indian languages whether there is any similitude between them:—

A man	... *Kegonia.*	To eat ...	... *Gnia.*
A woman	... *Kecanna.*	To drink	... *Okk.*
A child	... *Chu.*	Yams ...	... *T'owla.*
To laugh	... *Ayelaur.*	To weep	... *Poing.*
A canoe	... *App.*	A pine-apple	... *Frung.*
A house	... *Albanum.*	To sleep	... *Loom-loom.*
A fowl	... *Hayam.*	A dog ...	... *T'amam.*
A hog	... *Hown.*	Fire ...	... *T'amia.*
Fish	... *Ka.*	Rain ...	... *Koomra.*

They have no notion of a God, but they believe firmly in the devil and worship him from fear. In every village there is a high pole erected with long strings of ground rattans hanging from it, which it is said has the virtue to keep him at a distance. When they see any signs of an approaching storm, they imagine that the devil intends them a visit,

upon which many superstitious ceremonies are performed. The people of every village march round their own boundaries, and fix up at different distances small sticks split at the top, into which split they put a piece of cocoanut, a wisp of tobacco, and the leaf of a certain plant; whether this is meant as a peace offering to the devil, or a scarecrow to frighten him away, does not appear.

When a man dies, all his live stock, cloth, hatchets, fishing-lances, and in short every moveable thing he possessed is buried with him, and his death is mourned by the whole village. In one view this is an excellent custom, seeing it prevents all disputes about the property of the deceased amongst his relations. His wife must conform to custom by having a joint cut off from one of her fingers; and if she refuses this, she must submit to have a deep notch cut in one of the pillars of her house.

I was once present at the funeral of an old woman. When we went into the house, which had belonged to the deceased, we found it full of her female relations; some of them were employed in wrapping up the corpse in leaves and cloth, and others tearing to pieces all the cloth which had belonged to her. In another house hard by, the men of the village, with a great many others from the neighbouring towns, were sitting drinking *soura* and smoking tobacco. In the meantime two stout young fellows were busy digging a grave in the sand near the house. When the women had done with the corpse, they set up a most hideous howl, upon which the people began to assemble round the grave, and four men went up into the house to bring down the body; in doing this they were much interrupted by a young man, son to the deceased, who endeavoured with all his might to prevent them, but finding it in vain, he clung round the body, and was carried to the grave along with it: there, after a violent struggle, he was turned away and conducted back to the house. The corpse being now put into the grave, and the lashings which bound the legs and arms cut, all the live stock, which had been the property of the deceased, consisting of about half a dozen hogs, and as many fowls, was killed, and flung in about it; a man then approached with a bunch of leaves stuck upon the end of a pole, which he swept two or three times gently along the corpse, and then the grave was filled up. During the ceremony the women continued to make the most horrible vocal concert imaginable; the men said nothing. A few days afterwards, a kind of monument was erected over the grave, with a pole upon it, to which long strips of cloth of different colors were hung.

Polygamy is not known among them; and their punishment of adultery is not less severe than effectual. They cut, from the man's offending member, a piece of the foreskin proportioned to the frequent commission or enormity of the crime.

There seems to subsist among them a perfect equality. A few persons, from their age, have a little more respect paid to them; but there is no appearance of authority one over another. Their society seems bound rather by natural obligations continually conferred and received,—the simplest and best of all ties.

The inhabitants of the Andamans are said to be cannibals. The people of Car-Nicobar have a tradition among them, that several canoes came from Andaman many years ago, and that the crew were all armed, and committed great depredations and killed several of the Nicobarians. It appears at first remarkable that there should be such a wide difference between the manners of the inhabitants of islands so near to one another; the Andamans being savage cannibals and the others the most harmless inoffensive people possible. But it is accounted for by the following historical anecdote, which I have been assured is matter of fact. Shortly after the Portuguese had discovered the passage to India round the Cape of Good Hope, one of their ships, on board of which were a number of Mozambique negroes, was lost on the Andaman islands, which were till then uninhabited. The blacks remained in the island and settled it; the Europeans made a small *shallop* in which they sailed to Pegu. On the other hand, the Nicobar Islands were peopled from the opposite main, and the coast of Pegu; in proof of which, the Nicobar and Pegu languages are said by those acquainted with the latter to have much resemblance.—*Asiatic Researches, Vol. I, p.* 337, *Art. XXI (published* 1801*)*.

On the Islands of Nancowry and Carmorta,—By LIEUTENANT R. H. COLEBROOKE.

THE Island of Nancowry, or Soury as it is sometimes called, is nearly centrically situated among the Nicobar Isles. Its length may be about eight miles, and its breadth nearly equal. The Island of Carmorta, which is near it, is more extensive, but does not perhaps contain more solid land; being excavated by a very large bay from the sea. The space between these two islands forms a capacious and excellent harbour, the eastern entrance of which is sheltered by another island, called Trinkut, lying at the distance of about a league. The inlet from the west is narrow, but sufficiently deep to admit the largest ships when the wind is fair.

The Danes have long maintained a small settlement at this place, which stands on the northernmost point of Nancowry within the harbour. A sergeant and three or four soldiers, a few black slaves, and two rusty old pieces of ordnance, compose the whole of their establishment. They have here two houses, one of which, built entirely of wood, is their habitation; the other, formerly inhabited by their Missionaries, serves now for a storehouse.

These islands are in general woody, but contain likewise some portions of clear land. From the summits of their hills, the prospects are often beautiful and romantic. The soil is rich, and probably capable of producing all the various fruits and vegetables common to hot climates. The natural productions of this kind, which mostly abound, are cocoanuts, *papayas*, plantains, limes, tamarinds, betel-nuts, and the *mellori*,* a species of bread fruit; yams and other roots are cultivated and thrive; but rice is here unknown. The mangosteen tree, whose fruit is so justly extolled, grows wild; and pine-apples of a delicious flavour are found in the woods.

The Nicobar Isles are but thinly inhabited, and some of them are not inhabited at all. Of those we visited, Nancowry and Carmorta appeared to be the most peopled. There were thirteen villages, we were told, upon both islands; each village might contain upon an average fifty or sixty people, so that the whole population of these two will scarcely amount to eight hundred.

The natives of Nancowry and of the Nicobar Islands in general live on the sea shore, and never erect their habitations inland.† Their houses are of a circular form, and are covered with elliptical domes, thatched with grass and the leaves of cocoanuts. They are raised upon piles to

* Mr. Fontana has given an accurate and learned description of this fruit.—*Vide Asiatic Researches, 3rd vol., p.* 161.

† The Great Nicobar Island is perhaps an exception, where it is said a race of men exists who are totally different in their color and manners. They are considered as the aborigines of the country. They live in the interior parts among the mountains, and commit frequent depredations on the peaceable inhabitants of the coasts.

the height of six or eight feet above the ground, the floor and sides are laid with planks, and the ascent is by a ladder. In those bays or inlets which are sheltered from the surf they erect them sometimes so near the margin of the water as to admit the tide to flow under and wash away the ordure from below.

In front of their villages, and a little advanced in the water, they plant beacons of a great height, which they adorn with tufts made of grass or the bark of some tree. These objects are discernible at a great distance, and are intended probably for landmarks; their houses, which are overshadowed by thick groves of cocoanut trees, seldom being visible from afar.

The Nicobarians, though indolent, are in general robust and well-limbed. Their features are somewhat like the Malays, and their color is nearly similar. The women are much inferior in stature to the men, but more active in all domestic affairs. Contrary to the custom of other natives, they shave the hair of their heads, or keep it close cropt; which gives them an uncouth appearance, in the eyes of strangers at least. The dress of both sexes, their mode of life, and some of their customs, have been so ably described by *Mr. Fontana*, that little needs be said of them here: I have only to state in addition an extraordinary ceremony which they annually perform in honor of the dead.

On the anniversary of this festival, if it can be so called, their houses are decorated with garlands of flowers, fruits, and branches of trees. The people of each village assemble, drest in their best attire, at the principal house in the place, where they spend the day in a convivial manner; the men, sitting apart from the women, smoke tobacco and intoxicate themselves, while the latter are nursing their children and employed in preparations for the mournful business of the night. At a certain hour of the afternoon, announced by striking the gong,* the women set up the most dismal howls and lamentations, which they continue without intermission till about sunset; when the whole party gets up, and walks in procession to the burying ground; arrived at the place, they form a circle around one of the graves, when a stake, planted exactly over the head of the corpse, is pulled up. The woman, who is nearest of kin to the deceased, steps out from the crowd, digs up the skull,† and draws it up with her hands. At sight of the bones, her strength seems to fail her: she shrieks, she sobs; and tears of anguish abundantly fall on the mouldering object of her pious care. She clears it from the earth, scrapes off the festering flesh, and laves it plentifully with the milk of fresh cocoanuts, supplied by the bystanders; after which she rubs it over with an infusion of saffron, and wraps it carefully in a piece of new cloth. It is then deposited again in the earth, and covered up: the stake is replanted and hung with the

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* An instrument of brass somewhat like the *ghurry* of Bengal. Its sound is more hollow.

† We were present at the ceremony on the 1st February 1790, when the first skull we saw was that of a woman who had been buried but a few months before. It was then dug up for the first time by her daughter. This office, we were told, is always performed by the women, whichever sex the skull belongs to. A man in a fantastic garb officiates as priest.

various trappings and implements belonging to the deceased. They proceed then to the other graves, and the whole night is spent in repetitions of these dismal and disgustful rites.

On the morning following, the ceremony is concluded by an offering of many fat swine, when the sacrifice made to the dead affords an ample feast to the living; they besmear themselves with the blood of the slaughtered hogs, and some, more voracious than others, eat the flesh raw. They have various ways however of dressing their meat, but always eat it without salt; a kind of paste made of the *mellori* serves them for bread, and they finish their repast with copious potations of *toddy*.

The Nicobarians are hospitable and honest, and are remarkable for a strict observance of truth, and for punctuality in adhering to their engagements; but they do not want spirit to revenge their injuries, and will fight resolutely and slay their enemies if attacked or unjustly dealt with.* Their only vice, if this failing can be so called, is inebriation, but in their cups they are generally jovial and good-humoured. It sometimes, however, happens at their feasts that the men of different villages fall out, and the quarrel immediately becomes general. In these cases, they terminate their differences in a pitched battle, where the only weapons used are long sticks of a hard and knotty wood: with these they drub one another most heartily, till, no longer able to endure the conflict, they mutually put a stop to the combat, and all get drunk again.

* We were informed that a party of Malays had once landed at Nancowry to commit depredations, and were cut off to a man by the enraged inhabitants. A similar instance of their vengeance is said to have happened at the Island of Car-Nicobar, where they put to death some sailors, who were plundering their houses and probably attempting to violate their women.

A Geographical sketch of the Nicobar Islands with special reference to Geology. By H. RINK, PH. D., *Naturalist to the Expedition of the Royal Danish Corvette* Galathea; [*translated, from the German edition, by* DR. F. STOLICZKA.]—*Original published Copenhagen*, 1847—

PREFACE.

THE reader of this small contribution to the geography of India will know, from the introduction to my travels, that I left the Corvette *Galathea*,—which went on an expedition round the world by order of the King of Denmark,—at Pulo Penang, for the purpose of remaining temporarily on the Nicobar Islands. Besides other reasons, I was especially led to this, because I thought that a longer stay and a more thorough examination of a smaller area would be more satisfactory for me than the extension of the long sea voyage with short visits to many countries, and mostly in the vicinity of the landing places which had been already geologically examined. Besides, this group of islands is attractive, because it forms a distinct area in itself, and one (for the examination of which the opportunity was now offered to me) at the same time little known, and appearing to me to offer in many respects rich material for the naturalist. Subsequent events, however, showed that I was not able to carry out my project as I wished to do. Exertion in the heat, and probably also the noxious influence of the air in the forests, produced the same perilous fever which had already swallowed up so many foreigners on these islands. After numerous attacks of it, I was obliged to return to Europe. After a short stay in Egypt and Italy I reached home at Christmas last year (1846).

The expedition, to accompany which was to me an honor and a duty, had been furnished by His Majesty the King with the needful appliances for all branches of scientific inquiry in a natural history point of view.

As Zoologists with the expedition were Professors Behn, Reinhardt, and Kjellerup.

As Botanist, Mr. Kamphövener.

As Medical men, Messrs. Mathiessen, Rosen, and Diedrichsen.

Further, the First Lieutenant Rothe and Second Lieutenant Ravn were entrusted with the physical and meteorological observations; the ship's Chaplain, the Reverend Mr. Hansen, undertook the collection of ethnographical objects; and with the object of making inquiry into commercial relations, Mr. Nopitsch from Altona afterwards joined the expedition at Calcutta.

In the examination of the Nicobar Islands, moreover, Mr. Councillor Hansen, the Governor of the Danish possessions in the East Indies, took part. He joined us from Tranquebar.

The Botanist, Kamphövener, left the expedition on account of ill health at Pulo Penang, and died shortly after his arrival at home from pectoral disease, from which he had suffered for many years previously. The department of botany was after this entrusted to Dr. Diedrichsen.

A few months after my return I had the honor to hand over to His Majesty the King a report of my geological investigation on the Nicobar Islands. What I now offer here is principally a translation of this report into German, with a few additional remarks of general interest. For the notes regarding other branches of natural science which are included, I am indebted to the other members of the expedition, each of whom, after the visit to the Nicobars, sent home a preliminary report from Pulo Penang. An extract of these reports is already printed in the Danish language ("Uddrag af de paa Nicobar Oerne i Foraaret 1846, anstillede Undersogelser"). I have also, with respect to the description of the population of the island, extracted several passages from the work of a former colonist, the Reverend Mr. Rosen ("Erindringer fra mit Ophold paa de Nikobariske Oer").

I.—MY TRAVELS ON THE ISLANDS.

Among the places which were to be visited by the Royal Danish Corvette *Galathea*, sent out under the command of Captain Steen Bille in 1845 from Copenhagen, on an expedition round the world, the Nicobar Islands were prominently mentioned. These were under the Danish supremacy since 1758, when the Danish Asiatic Company first made an attempt at a colonial settlement on Great Nicobar; and afterwards, in 1807, England took possession of them for a short time. During that period several settlements were attempted, some from Tranquebar; at one time the Moravian Brethren, between 1768 and 1787, had an establishment on the Island Nancowry; also in 1778, the Austrian Captain Bennet founded a small colony on the Island Carmorta in the name of his Government. But all these attempts lasted only for a short time. The influence of the climate seems up to this to have defeated all efforts on the part of European as well as Indian settlers;—some succumbed to the nervous (malarious) fever apparently peculiar to these islands; others returned home within a short time without seeing any success in their labor. Thus it happens that we still know so little of the natural conditions of the islands, of their aptitude for cultivation, and of their produce. As is known, England a few years ago made an attempt at a colony on the Andamans, but it had to be given up for the reasons assigned. Whether these difficulties are really insurmountable, whether the whole range of these islands is destined by Nature only to support a miserable half-savage population, part of which ranks in the lowest grade of civilization anywhere known, or whether, as appears probable, the difficulty lies only in the first beginning, time will sooner or later show. The present state of the islands seems indeed anomalous, considering their situation in the midst of so many countries which, by means of European civilization, are already in

a flourishing state in the hands of the active and enterprising English nation; and further, considering that many ships going to and from those countries annually pass through the channels of these islands, and sail by their beautiful and naturally-secure ports, there can be no doubt that the situation entitles these pre-eminently to take rank among the former.

During our stay in Calcutta in November 1845, we were busily occupied with the preparations for an examination of the islands, which it was necessary to carry out during the dry season, in the months of January to March. I had resolved to go on beforehand to Little Nicobar in an English vessel sailing at the beginning of December. After a very difficult voyage, on account of contrary winds and stormy weather, which kept us long in the high sea about the Andamans, we entered a small bay on Christmas day, with a gentle N. E. breeze and beautifully clear weather. The land surrounding us here greatly contrasted, by its fresh and luxurious greenness, with the flat, partially sandy and barren eastern coasts of India. The mountains of Little Nicobar are covered with primeval forest up to their summits, at few places only do they come abruptly down to the coast forming precipitous cliffs; generally there is a stretch of cocoa-palm forest between them and the sea, and in front of it a great expanse of white sand with bright green shrubs. Our ship was immediately surrounded with the canoes of the natives, who got permission to come on board, and brought us presents of cocoanuts and *pisang* fruit. They were people of large and strong frame of body, and with a much lighter color of the skin than Hindoos generally have; I shall afterwards return to their probable descent; they all went about nearly naked, and the red color with which they paint their faces, as well as the remarkable manner in which they disfigure their teeth by chewing betel and rubbing them with acrid juices, gave them an appearance of peculiar wildness. On the whole their appearance and general behaviour proclaimed a high degree of stolidity and indolence. Although before our visit they had seen only two or three ships in their harbour, there was scarcely one of the various and not common things in our possession which attracted their curiosity, most of them sat down with a silent look, and when they got up to receive a present, especially tobacco, so highly esteemed by them, their movements were easy and slow.

Next morning I went on shore for the first time. In approaching the coast, at a distance of about 100 feet from it, we everywhere saw the breakers produced by the coral-reefs; they were scarcely visible from a greater distance, but seen close by, they threatened ruin to any boat of ordinary construction. As we rowed along for a short distance a break was unexpectedly discovered in the reef, forming a channel through which we passed quite safely into a little bay, while the breakers on either side were most furious; and when I looked here into the depth of the clear sea water, I obtained for the first time the surprising sight of the beautiful corals which, with their arched surfaces in fantastic groupings formed the steep (30 to 40ft.) terraced outer wall of the reef. The place where we first landed was not inhabited; the forest, extending to the very sand bank, formed of washed-up coral fragments along the

coast, was so dense that I could hardly penetrate six or eight steps by cutting a way with a large knife; its luxurious growth, produced by the moisture and the fertility of the ground, appeared, so to say, at war with the sea; the strip of white coral sand which separated the one from the other was hardly broad enough to allow one to follow the coast along it; and on a stretch of about 100 paces there were some of the gigantic trees *(Barringtonia speciosa)*, which form the outer margin, quite undermined by the waves, and lying horizontally across the coral-reef in the shallow water. The clear, deep-blue sky, the fresh and cool sea breeze, and the noise of the breakers close by, added to the solemn impression, which the first sight of this peaceful and undisturbed workshop of Nature had made on us. In the time between Christmas and New Year's day I only made excursions in the immediate vicinity of the port; and on account of the density of the forest on the one hand, and the fine section of the cliffs near the coast on the other, I chiefly kept along the latter. Still these excursions were attended by some difficulties, for though the flat coral reef extending all round offers a comfortable passage during low water, it is under water during high-tide, and thus it happened that on returning I was shut out by the water reaching up to the cliffs, so that I had often to wade or swim through the water, and at intervals again walk on hot coral sand.

An English Captain, who visited the Nicobars in the spring of 1845, brought from them several pieces of coal, which were given to him by the natives, and according to their information were found among the fragments thrown up by the waves, as was also indicated by their rounded shape. Seeing the importance which attached to the occurrence of useful coal on these islands, I especially directed my attention to this point when examining the various rock masses. Those pebbles were found on the shore of the southern group of islands, and especially in the neighbourhood of this port, and the question had first to be solved, whether they were derived from beds here *in situ*, or whether they were brought to the shore by chance. That the former may be the case I made perfectly certain; the natural sections of the rocks exhibit everywhere bedded masses of sandstone and shale, in which here and there particles of coal occur of a similar kind to that found on the coast; but it still remained very doubtful whether considerable masses existed. The said beds were raised to a high dip, occasionally approaching to the vertical, and the hills composed of them in the interior of the island sometimes rose very precipitously to 1,000 feet. Still I did not find in these places a trace of intruded plutonic rocks.

The flat coast consisted of fragments of coral and shells, and when I took advantage of the bed of a stream to penetrate into the forest, I was not a little surprised to find that the ground was everywhere covered with loose fragments of coral and shells, and that a compact limestone, made up of the same masses formed the beds which were cut by the stream in the lower part of its course. Still I seldom succeeded in penetrating in this manner into the forest for more than a few hundred paces. Then the bed usually became very deep and

swampy, a large quantity of vegetation in process of decay filling the same; large trees lay across in all stages of decomposition; everything breathed a damp atmosphere, similar to what one finds in deep-closed cellars; and at last the road was perfectly closed up by thorny branches hanging down from both sides and entangled with the branches of the fallen trees and their epiphytes.

Very different from these dark recesses of the primeval forest was that occupied by cocoa-palms, which are always found on the external edge of this flat ground. Here stood the huts of the natives, who almost owe there existence entirely to the cocoa-palms, using as they do their produce for all the various necessaries of life. The whole industry of their lazy existence is devoted to the cultivation of this plant, although it is undoubtedly indigenous to these islands, and seems made for the coral ground soaked with salt water. The cocoa-palm forest is still half treated by the natives as a plantation; it is, therefore, generally free from underwood, is traversed by convenient shady paths, and is accessible to the fresh sea breeze; while on the other hand it has not the character of regularity which, in cocoa-palm plantations of the cultivated parts of India, diminishes the peculiar impression which this form of vegetation produces upon a European visitor. Although the palms usually were much nearer to each other than would be prescribed by a planter's skill, and often were mixed with other trees and brushwood, I have hardly seen them finer and of a fresher green on Pulo Penang or Ceylon than on these islands. I did not omit often to visit the huts built among these trees, for the natives combined with their peculiar phlegmatic temperament a certain good-humoured and patriarchal hospitality. Their mode of life was least changed by intercourse with foreigners in these parts of the group of islands. The simplicity of their necessaries of life hardly appeared to have developed in them the idea of distinct property; of any state regulation they had no conception, and of religious prejudices a very slight one. On reaching the shore, I was generally surrounded by a large number of inquisitive fellows, taken to their huts and there entertained in the best manner. I also used to take one of the people with me on my excursions; for if one only allowed the time for consideration necessary to them for everything they undertake, he would receive much assistance. I had, therefore, generally for the whole day, a companion, who, on account of his acquaintance with the localities was of great use to me, and as soon as on our tours along the coast we came into a cocoa-palm forest, he was always ready to climb up a tree and fetch a few nuts, the cool water of which was an agreeable refreshment in the heat of the day.

The port where we anchored was partly formed by the coast of Little Nicobar, partly by the small island called by the natives Milu. The latter is partly composed of sandstone hills, partly of flat alluvial ground rich in cocoa-palms, and from this circumstance also rich in inhabitants. As it was of a small area, and in some degree accessible by the paths made by the natives, after New Year's day I devoted several days to its more thorough examination. Up to the end

of December we still had daily cool showers of rain, the last remnants of the S. W. monsoon and the wet season. But now came the dry season with its full force, and for the first time I felt the heat oppressive. To walk on that side of the island protected from the N. E. wind in the heat of the day and along the glaring white coral sand was especially very trying. Very often I had to retreat quite exhausted into the shade of the forest close by; but there was one object which, whenever I took to rest in this way, gave me always an occupation. The beach along the coast is very largely inhabited by the well known kind of crabs which take possession of empty shells, hiding the posterior portion of their body in them. They are even seen often to climb trees by stretching out their anterior feet and pincers and dragging with them their borrowed domicile; it is even reported that they go and fetch the cocoanut themselves from the trees. Most commonly, however, they crawl about on the coral sand, and whenever I drank the water out of a cocoanut and threw it away, I observed them running towards it from all sides, large and small, in the most varied costumes, some carrying on their backs large shells of *Trochus* or *Strombus*, others the smallest *Cerithia*, but always protruding their blood-red head,—and in a short time the cocoanut was full of them. Even if taken in hand and held up near a cocoanut the crab ate with such rapacity that he sometimes stretched out too far from his house, lost his balance and tumbled down; it was most comical then to see him running about the sand and trying to hide his tail. It is almost impossible to find a dead shell not occupied by a crab, and I suspect that the propagation of these crustacea is limited by the number of shells available.

After I had gone several times round the island, I made an attempt on the 11th January to penetrate into the interior. I followed a path leading from a hut on the eastern side into the forest; it first passed along a few *pisang* (plantain) plantations, apparently cultivated by natives in former times; then passing through a thick brushwood I reached a valley which occupies the centre of the island, and which astonished me by the peculiar and altogether tropical character of its vegetation. The *ficus*-like and other dicotyledonous trees and bushes, which form the greatest part of the primeval forest, almost disappeared, and the little ornamental *Areca*-palms and gigantic *Pandanus* with their air-roots, their rich foliage and enormous fruit have almost suppressed all other vegetation. I thought at first sight that this was a plantation of the natives, because they make use of the fruit of both these trees. I attempted to penetrate at different places, because there was no underwood in the way, but I sank everywhere knee-deep in a peat-like mud. I will afterwards give some particulars as to the origin of this kind of swamp, which is characteristic of the islands, and connected with the coral formation. Following the path across the hills towards the north I reached the coast again, and saw in the distance a heavy smoke over the sea; soon I recognised the Steamer *Ganges* which left Calcutta in December with several members of the expedition, but which went first to Pulo Penang to bring some Chinese workmen. After I had gone round the island, I found her already at

anchor in the port, and had afterwards the pleasure of seeing friends on board: they left Calcutta at the same time, but were also surprised by the same storm in the Andaman sea which kept the vessel in danger for several days.

In the evening of the 14th we weighed anchor and steamed round the northern group of islands, where we had to meet the *Galathea*. It was our intention to anchor in the Nancowry Harbour. The next morning we already saw land surrounding us; we came between the Islands Nancowry and Trinkuttee, and I was not a little surprised at the sight of them from the sea, being so characteristically different from that of the southern islands. The land rose into small hills, the heights of which were covered with green grass, while below they were surrounded by thick forest, and still finer were the various changes between light-green hills and deep-colored forest, when we entered the port through the eastern passage. With the exception of two narrow passages, the harbour is everywhere shut in by the land of the Nancowry and Carmorta Islands, and even these outlets appeared from outside closed by the Islands Trinkuttee and Katchall. The hills extend on both sides as promontories far into the sea and form deep bays. I could have fancied I saw our home lakes surrounded with beech trees and green fields, had not the tall *Nibong*-palms of the forest, and the cocoa-palms with their wretched huts reminded me of the distance and the foreign land. It is not to be wondered at that the former colonists had selected the neighbourhood of this large and excellent port for their settlement; besides the hills, free from forest, which it is so difficult to exterminate, may have appeared to them the best fitted for cultivation. But it seems quite clear that this grass vegetation is the result of the sterility of the ground, and that a place on which, with all the moist and tropical atmosphere and the abundance of seed, nature has been able to produce only spare and coarse grass, is also unfit for cultivation even when supported by human industry.

It happened that a short time after we anchored, the *Galathea* appeared at the eastern entrance, passed us, and selected a place for anchorage close to us. Excursions were now daily made in the neighbourhood by the members of the expedition. The Botanist, Dr. Philippi, who was for some time in India, was added to my former companions. We generally went together every morning on shore, pitched a large tent, and then went out in all directions, each prosecuting some special purpose. I first went to the village Inuang; the natives met us on the strand, but were apparently timid and suspicious; I also noticed among them some repulsive physiognomies, with the cunning murderous look of the Malays. They went about partly naked, some had a few rags of European clothing, which they obtained from ships' captains, and thus we saw a fellow with a torn shirt, another with a piece of a pair of breeches, and some only with old worn hats or red caps, and a few others with a handkerchief tied round their necks. Close to the village they showed us the remains of the settlement of the Moravian Brethren, deserted in 1787; a well with good walls was nearly filled with fallen branches; beside this, stood a staircase of stone, the place where a house had stood; but the garden was grown over with wild brushwood, and

large trees already occupied the place of the former house. On the opposite coast, in a situation called by the natives Kamlaba, we mounted a few grassy hills to find the remains of the Austrian settlement. But I think no traces were found of it, and only obscure contradictory reports exist among the natives regarding the place where the houses stood; however, the fine views which we had from these bare hills over the harbour amply repaid us for the trouble of climbing them. Separated by a bay from this lies the Monkata Hill, where the last Danish colonists had their dwelling; we found, but with difficulty, under the high grass, the remains of a house built of stone, and in the valley close by a cocoa-palm and *Areca* plantation grown into a wilderness.

Because the neighbourhood of the harbour, on account of the absence of forest and smaller quantity of jungly vegetation, was more easily accessible than the southern islands, it especially offered a rich field for the botanists. The hills chiefly consisted of a light clay stone resembling meerschaum, and through its lower beds everywhere occurred conglomerates of various plutonic rocks of serpentine-like character. The same rock lay all about on the strand, and on account of the large size and great number of the pieces, I suspected that they must be *in situ* not far off. I found this shortly afterwards when we made a tour by steamer to the Island Kattlechall, and lay toon the west side of Carmorta at the entrance of the Bay of Ulalla. I shall afterwards notice in more detail these plutonic rocks, and the clay and pebble formations derived from them.

The natives observed our doings with curiosity, but at the same time with timidity and suspicion. The communications with foreign vessels, and especially the example of the Malays, who often visit the islands, partly with the object of catching *trepang*, or to buy edible birds' nests and ambergris of the Nicobarians, partly also for their piratical trips, appear to have made an unfavorable impression upon their morals, and to have been the cause of the piratical doings of the inhabitants during the last few years. In 1839, for the first time, an English vessel was attacked between Carmorta and Trinkuttee, originally probably out of revenge, because the sailors had insulted the women. The Captain and half of the crew were killed by them, a large number of canoes at the same time attacking the ship from all sides and overpowering those on board. Only five men and a mate escaped in a boat, and were so fortunate as to meet an English man-of-war; in 1840 an English ship was sent out to avenge this act, but all the inhabitants fled into the forest, and they had to be satisfied with burning down a number of huts and firing a few shots into the dense forest on the chance of hitting some one. In August 1844, Captain Ignazio Ventura was anchored with a schooner between Terressa and Bompoka. A number of inhabitants from the villages Lallang and Bengallah came to him on board, bringing merchandise and presents under the pretext of friendship; two of them went to the Captain in his cabin, and while one was opening a cocoanut for him, the other gave him a cut on the head with the large Malay knife. This was the sign for a general attack. The Bengal crew, frightened, jumped overboard, and those who were not

killed were drowned. The ship was plundered and set on fire. In the same year Captain Caw was killed on his vessel near Carmorta; some of the crew jumped overboard, but the serang or boatswain, an Arab, got a gun, shot one of the fellows dead, frightened the rest away, and escaped with the ship to Pulo Penang. As these assaults were originated partly by the Nancowry people themselves, partly through their instigation, it was only natural that the presence of our man-of-war was not welcome to them. They asked, with an evident uneasiness, how long we wished to stay, and whether we intended to build any houses. But from the villages Itoë and Bajuga all the inhabitants fled; I several times visited the deserted houses to inspect the domestic utensils left behind. The Nicobarians who accompanied me said bad people lived here, for good people would have no fear.

On Sunday, the 25th January, we weighed anchor and moored between Terressa and the beautiful little Island Bompoka. While the ship cruised I followed in a boat, we looked out for a landing place on Terressa, but we met everywhere with unusually strong breakers; after we had gone a long stretch along the coast without finding an opening in the coral-reef, we noticed several natives standing under huts on the shore and looking at us. We had with us a young Nicobarian, who had accepted the name "London," and who acted as interpreter between us and his countrymen. In spite of his repeated calling that they should come to us in a canoe, they remained still staring. But "London" knew how to do it. He jumped overboard without taking off his sailor's dress, which we gave him for decency sake, allowed himself to be thrown by the waves on the reef, and soon after stood transacting business with his friends on shore. At last they pushed out a large canoe and took us two by two from the boat to the shore. I was not a little astonished to see how they managed to get the little boat, cut out of a trunk of a tree, through the breakers. I was reminded of the skill exhibited on such occasions by the boatmen on the Coromandel Coast, but the break of waves produced by the peculiar formation of the coral-reef is much more rugged and violent. They carefully watched the rolling wave behind us, and when it came within a certain distance, then they pulled forward with all their strength. We went to the nearest hut and refreshed ourselves with the water of some splendid cocoanuts. Soon a crowd of people collected round us, and by means of the beads, earrings, and pocket-knives which we gave them as presents, we produced general good humour among them. Among others a young man came to us calling himself Captain Francisco, and wearing an English blue-striped coat and trousers. He exhibited a vivacity unusual for the people of his tribe, made all kinds of comical foppish motions, acted as if he understood everything we said, and answered to every thing "very well, how do you do." But I believe he was a thorough blackguard, for the certificates of English captains, which he produced, were of very doubtful character, and "London" always answered when he was asked, that he did not know whether he was a good or a bad fellow. We made a tour in the neighbouring cocoa-palm forest which occupied a considerable stretch of the coast. The people also appeared here well off according to their standard; we saw abundance of

pisangs, sugar-cane, pigs, and fowls. We returned, however, without any particular success from this trip, for time did not allow us to cross the alluvial land; still I found on their reef several pebbles of a characteristic plutonic rock, no doubt derived from somewhere *in situ* on the island.

Next day we went round the southern corner to the western side of the island. Passing the village Laksee a large boat with natives approached us, and we took two of them with us on board. One had his face colored intensely red, and his neck hung with leaves. The other was a short stout fellow with an unusually jovial expression, he also had learned a few English words which he constantly repeated laughing. His mirth had a very repulsive aspect, and it was difficult to decide whether he had adopted it from fear, or whether he had indulged in the cocoa-wine so much liked by the Nicobarians. We anchored in front of a village situated a little further north.

The landing in this place, through an opening in the reef, was beautiful and secure, but immediately on both sides surrounded by breakers, such as I had seldom seen. Next day we pitched a tent on the shore. The inhabitants were surly and uncivil, and I could not induce one of them to accompany me. My way towards the south led me along the coast through an extensive, beautifully open, cocoa-palm forest with numerous very fine banian trees. Then I followed the bed of a stream into the interior; it cut everywhere through coral limestone which further on appeared to rise to a height of 20 to 30 feet. When it became too swampy, I attempted to get through the jungle at the side and soon found myself in an open grassy space surrounded with flowering bushes. Thence I ascended the nearest grassy hill from which I had a magnificent view over the greatest part of the island and the sea. I found on this hill the same sandstone as forms the southern islands, but pierced by plutonic rocks and apparently altered by them. I returned in the evening without meeting any trace of man.

On the 29th January, we weighed anchor again and cruised towards the northern coast of Carmorta. We went on shore the next day in several boats. While some of the party made a tour inland to hunt the wild buffaloes said to be found on this island, I followed the precipitous cliffs exposed along a great stretch of the coast; they consisted of the clay with pebbles formerly alluded to. But the high flood at last cut off my way; I therefore climbed the hills, and thence overlooked a large portion of the island without any forest. There was but little grass on the top of the hill, and the reddish soil, derived from the sterile dry claystone and ferruginous sand, appeared everywhere in patches. There stood, however, here and there on the grassy plains of the island, *Pandanus* and *Nibong*-palms. On the slope of the hill the grass was higher and denser as I passed down, and the passing through it, exposed to the rays of the sun, was so fatiguing, that I had to throw myself down every moment. Partly vexed on account of the difficulties which this grass had put in my way, partly to kill time, I wanted to try whether it would burn. With

a glass I set fire to a little dry foliage; in a few minutes the fire spread in all directions, and was carried by the land breeze inwards. The whole hill was soon in flames, and a dense smoke passed over the range. I was almost afraid that some harm might be done, but as soon as the fire came up to the highest ridge and was protected from wind, it only spread further in single strips; and not long after it disappeared altogether. We returned to the ship in the evening; of buffaloes nothing was seen, but still we found unquestionable tracks of them.

On the 31st January we moved west round Trinkuttee, right across the Nancowry harbour, and then towards the south, when we anchored in the evening in the port of Little Nicobar. Next morning I found myself again surrounded by the well-known shores over which I had climbed at Christmas. The *Galathea* remained here twelve days. During this time I made a tour round Little Nicobar in the steamer. In St. George's Channel, which separates it from Great Nicobar, I had myself landed upon the small Island Kondul, while the ship went to carry out some soundings. I persuaded two Nicobar boys to accompany me with their canoe for the whole day, and although I could not speak one word with them, having, as with my two Chinese servants, to communicate by signs, still they followed me steadily round the island, and were eager to satisfy all my wishes. The news of the arrival of a foreigner soon spread over the whole island, and when I landed on the southern side several canoes came towards me from both sides. A so-called Chief came forward in European dress, but in every other respect clumsy, and with unusually hideous features, such as I had scarcely yet seen in any other of the Nicobarians. After I had entertained him with my wine and provisions, and had distributed cigars among his companions, we all went together to his hut, which with many others was situated on the eastern side. It seemed unusually clean and orderly. The floor and the walls were decorated not without some taste with sporting and fishing tools, besides sails of palm leaves, and they brought me some beautiful fruit from the garden close by.

The island proved to be of the same geological formation as Little Nicobar. High sandstone hills covered with forest occupied the middle part, and where they were exposed near the sea, patches of brown coal were almost everywhere visible. On the eastern and western sides was some extent of flat land covered with cocoa-palms and gardens. I also visited, before I went on board, a few spacious caves which were full of edible swallows' nests, of which I myself took down a few.

Afterwards the whole party made an excursion from Little Nicobar to the small Island Trice. Its position in the open sea made the landing very difficult, as we had no canoes or natives to help us. We approached the beach as close as we could consistently with safety to the boat, then dropped anchor, and took advantage of every quiet moment to let the boat drift so far in, that one man could jump off every time and thus escape the approaching breaker. To return again we had to escape by swimming. The island was not inhabited, but contained plantations of cocoa and *pisang*-palms, and a few huts built by the

inhabitants of Little Nicobar for a temporary stay. A large number of birds were living in the forest.

On the 13th February the *Galathea* left the port of Little Nicobar, sailed westward round the island, crossed the St. George's Channel and anchored in the evening in a bay on the northern side of Great Nicobar.

The coast of this island appeared to be thinly inhabited. Only a few miserable and partly deserted huts stood near the place where we anchored. The mountains rise very precipitously behind the narrow strip of cocoa-palm forest which surrounded their base. From here we sailed along the eastern coast of Great Nicobar southwards. The land everywhere exhibited the same character. The mountains, rising in the interior up to 2,000 feet, approach the sea on the eastern side with precipitous cliffs. We were only twice on shore. At the first locality there stood only a few huts long since deserted, high grass and brushwood already grew under the cocoanut trees, the fruit of which appeared to be chiefly the food of monkeys. I only found the usual coal-bearing sandstone. In the second bay the landing is extremely difficult; we had to jump into the water and wade to land. What remained of dry clothes on us was thoroughly soaked by the showers of rain which followed. The dense forest extending to the very sea was everywhere in the way. I however reached a little solitary island composed of a plutonic rock surrounded by thick masses of conglomerate. As we sailed along the coast further towards the south I observed several similar rock-islands. At last on the 17th February the *Galathea* anchored in a spacious bay on the southern side of Great Nicobar. A river flows into it, and is navigable by boats for one to two days' journey. We desired to make use of our stay to penetrate into the interior of the island.

As are the Veddahs in Ceylon, there is a wild human race inhabiting the forests of Great Nicobar. But the people have as yet been seen only by the hostile inhabitants of the coasts, and are only known from their random reports. An independent tribe on an island of 20 square miles, confined to the primeval forests of the same, scarcely ever approaching the coast, and never coming into any communication with another tribe, was certainly a subject of curiosity for us. This was increased by the strange reports which the Nicobarians gave of them: they called them Orang-Utang signifying in Malay, "forest-men," and considered them as a thoroughly different race, far below themselves, and which they hate on account of their uncivilized mode of life. They go about perfectly naked, sleep on trees, and live on lizards and snakes, and some poor fruits and roots of the forest. They often come out at night from the dense forests for the purpose of stealing from the inhabitants on the coast, and were therefore living in enmity with them. I believe, however, that only a very few of the Nicobarians who spoke to us about them had themselves intercourse with those forest men, or perhaps even seen them, for their accounts had entirely the character of tradition, garbled by various additions; some reports contradicted themselves, and others

were connected with superstitious fancies. For instance, when we attempted to persuade one to go to the forest men and bring one of them to us, he pointed with fright to his stomach, and showed how large the Orang-Utang could make it by his magic craft.

On the morning of the 20th we went up the river with the tide, and reached in the evening a small place hedged in with palisades, which to all appearance had been deserted only a short time before by its inhabitants, they having been frightened by our firing. We fastened our boats, and determined to stop here for the night. The huts were built in the same style as those of the coast inhabitants, but so small and miserable that one could scarcely call them places to live in, and it appears certain that they belong to a tribe quite different from that inhabiting the coast. They were, strictly speaking, only roofs of planks supported by posts, and apparently only intended for sleeping places, or as a scanty protection against incessant rain. In this respect also they were tolerably adapted for our wants; for the storm which here overtook us was accompanied with such a downpour of rain as I never saw, even during the rainy season which I subsequently spent on the islands. We had just taken our arms and provisions out of the boats, the tent was pitched, the fire made, and we expected to have a pleasant evening after our fatiguing journey, when suddenly the downpouring mass of water put out the fire, and soaked everything through. After the first confusion subsided, we managed to get a fire again, and prepared for a night's rest, while outside thunder and lightning followed each other with the severity usual in this climate. I should have liked to know the conversation of the rightful possessors of the place, and how they got through the night. By early morning the storm had subsided. After we had dried our clothes, and once more inspected the property left behind by the forest inhabitants, we got again into our boats. The river was rather swollen by the rain, and its rapid course soon brought us to the ship.

With this short visit to the Great Nicobar terminated the stay of the *Galathea* near these islands. A party of the expedition was destined to remain here with the steamer *Ganges*. I resolved to join the latter, meanwhile I accompanied the *Galathea* to Pulo Penang.

We weighed anchor on the 25th February, and next day we lost sight of the mountains of Great Nicobar. Up to this we all were well, and almost doubted the dangers of the climate of the Nicobars so much spoken of. But only eight days after our departure there appeared the first attacks of fever on board the ship, and while in the port of Pulo Penang nineteen persons were taken ill in a few days, all who had spent that night in the forest of Great Nicobar. I was on a tour inland of the Malayan Peninsula when the fever and head-ache attacked me. I reached our hospital in Pulo Penang with difficulty; my stay on this charming island was thus embittered in a melancholy manner. I was obliged to keep my bed for a week, and during this time four of my companions died, just when everything was ready for departure. I took leave of my friends, and went on board an English vessel which was ready to go to

Car-Nicobar for cocoanuts. The N. E. monsoon was now again decreasing, and on account of the calms which occur during the change of the monsoons, especially at the entrance of the Straits of Malacca, we were obliged to wait for several days under the Lankava Islands and the high coast of Sumatra, until, on the 18th March, we reached, with a fresh N. E. breeze, the port of Little Nicobar, where I found my friends on the steamer in perfect health. Not to expose myself to the dangerous malaria of the forest, I determined first to sleep on board until a proper place was cleared for us. On the Island Milu, where we arranged a few houses for our workmen, I bought a hut of the natives, and was for those days busy in setting out there my collections and instruments. We had at this time frequent calms, and the sun was very hot; only occasionally a shower of rain gave a little relief. On the 6th April we weighed anchor for the purpose of visiting the northern group of islands. A light breeze sprang up to mitigate the heat when we got between Katchall and Nancowry, and we steered through the western entrance to the port. I went on shore in a boat which had taken in water near the village Bajuga. All the inhabitants who had run away during the stay of the *Galathea* I met now, but their suspicious looks and their sulky behaviour did not indicate the best intentions. The miserable huts, nearly surrounded by forest, also produced no favorable impression.

On the next day we went to Bompoka, and anchored about mid-day in front of a village on the western side. Viewed from the sea, the small island had a very characteristic form, which reminded one of volcanic islands. The central ridge, about 800 feet high, surrounded on the southern side a crater-like valley, and gave off spurs which proceeded in all directions like radii towards the circumference. The simple grassy covering of these hills permitted exact observations of their form, while the forest extended into the valleys. The breakers were very strong, but there was an opening in the reef near the houses; the place looked inviting. The large huts were surrounded by gardens with all kinds of fruits and spices; the inhabitants were hospitable. Two of them accompanied me on my tour in the neighbourhood that afternoon. After I had examined the bed of a small stream, which was filled with pebbles of a serpentine rock, we followed southwards a shady path through the cocoa-palm forest of the flat coral land. After half an hour's walk we reached a precipitous cliff, which, to my great astonishment, did not show any plutonic rock, but only coral limestone. The coral formation formed terraces to a height of from 60 to 80 feet. I had not as yet found upon the islands such clear proofs of the more recent upheavement of the ground. On the sea side my companion showed me a cave in the cliff, produced by the former action of the waves. We found the top of it nearly all covered with edible birds' nests.

We started on the same evening: when I came on deck next morning we were near the Island Tillangchong. It was our intention to attempt landing, because the island had never before been visited. I do not know how the story originated among sailors, that the Nicobarians use it as a Siberia for their criminals. It had

however, from all sides, a hopeless barren appearance. Isolated from the rest of the group it rises from the sea in a narrow and precipitous cliffy ridge. The heights are covered with bushes decreasing gradually downwards, until the bare cliffs fall almost perpendicularly into the sea. We sailed along the western side seeking in vain for an anchorage; a line of 40 to 50 fathoms did not reach ground although as near to the cliffs as was consistent with safety to the ship. At last a little bay was found between some bare cliff-bound islands. I landed to examine the rocks—no man was to be found—but I saw several cocoanuts opened with knives, and also remains of fire on the shore. I heard afterwards from the Nicobarians of Nancowry that the inhabitants of Cacena on Carmorta occasionally go across to get some edible birds' nests.

When we came the next day into the harbour of Little Nicobar its aspect appeared once more changed. I had generally hitherto had fine weather during my stay in the islands: only a few showers occasionally occurred, passing quickly away. But on this day the sky was covered with a thick mist; heavy clouds hung everywhere on the mountains; small white patches of mist rose like steam from the forest and spread over the valleys. I then recollected the descriptions of former colonists which say, "cloudy weather lasts for eight months on these islands," so this seemed just the weather which we had to expect. I found afterwards that the true S. W. monsoon had not yet set in but it came with full force about the end of May, after many calm days of clear sky and the most oppressive air that I ever experienced here.

During this time we once more visited the Island of Bompoka, and twice the port of Nancowry. At the last place we remained from the 15th to the 16th May. The weather was even then very unsettled, and scarcely half a day passed without a heavy shower; I specially made use of the time to collect corals in the shallows of the harbour. I had intended to study the coral-reef with greater accuracy during the long rainy season, when I could not make many excursions. For this purpose it was especially necessary that I should make a collection of the coral species occurring on the island. The true reefs, however, offered little opportunity to obtain them. Breakers seldom allowed one to approach the point where there were any living corals, and it was still more difficult to observe them and break them off. In the port of Nancowry, however, there were generally no breakers, and although there were no true coral reefs either, there were a good many corals to be found locally on the sandy ground, and these exhibited a far greater variety of species than those of the outer reef, and were easily obtained. For this purpose I bought a canoe from the natives, and could with it pass over shallows, and have it carried easily from one place to another. I was so fortunate as occasionally to get corals with the animals in them; among others I found one day a beautiful large *Tubipora* (*? musica*), which I had hitherto obtained only in fragments on the shore. The animals protruded about half an inch out of the tubes; and because they were so close as to touch each other with the radiating arms, the whole surface appeared to be covered with a gelatinous mass. When touched they always retracted within the tubes, but

they remained alive for about a quarter of an hour after they had been taken out of the water. I used to preserve some of the animals in spirit; and exposed near the village Malacca a collection of corals for the purpose of getting them cleaned by the rain. With the corals in the shallows of the bay occurred a large number of sponges, imitating the coralline forms either by their convex or branching surface, and giving by their fresh light-yellow color, and by the variety of their forms, a most surprising aspect to the sea-bottom.

On our return to Little Nicobar, the rainy season had fully set in. I still recollect the dull impression which these last few days of my stay on the islands made upon me. I then began to take advantage of the opportunity, which was offered by our clearances of the forest, to make a collection of plants, and noted specially the dimensions of the large trees that were cut down. But even in the intervals when there was no rain, everything in the forest was dripping wet, and as I could not go any distance on account of the unsettled weather, I arranged my collections in my hut, and made besides some chemical experiments. Every moment it became perfectly dark, and then heavy rain followed. The natives often came to me, partly from curiosity, partly to obtain protection against the weather: for they were shivering with cold, and begged more for clothing now than at any other time. Their sluggish and lazy manners appeared to me to be more in accordance with the character of the climate, now that I had experienced a part of that season which predominates on the islands. After many trials, I at last succeeded in inducing one man, who was most attached to me, to execute some work for me, for a reward of course. He always first repeated the objections of his countrymen, that the demons inhabiting the forest would punish every one who would attempt to touch it, and after I had persuaded him out of that as well as I could, he insisted that before all he must get permission from his wife, for he would be beaten by her if he should attempt such a thing without her knowledge. He brought her the next day and with her permission he began to clear in the forest a place for me where I wanted to make a garden. But I had not the chance of seeing what became afterwards of the pine-apples and melons which grew very rapidly in the moist climate. As our crew was very subject to fever, and we were short of medicines and fresh provisions, the Captain determined to make a trip to the nearest English colony.

We weighed anchor on the 24th of May and lost sight of the islands the next day. A week later I found myself in a very different situation. Shortly after I left I was attacked on board with all the usual symptoms of malarious fever. It is scarcely possible for one who has not had personal experience to understand the severity of the illness, and the rapid prostration which it causes. I was on board for some nights, upon which I always look back with a feeling of horror, and on our arrival in Pulo Penang, I went immediately on shore. I was soon a little better and able to sit in an airy cool verandah of a house in Georgetown. A little garden full of nice flowers and some large *Oleanders* in flower extended to a street of the ornamental houses of the Chinese

colonists. My little strength would not allow me to get up and walk a few paces without becoming giddy; but the favorable situation and the active occupations of the people around me, produced an invigorating effect upon me; I was as if awakened from a heavy dream, in which the recollection of the last events before my illness mixed itself with feverish delusions, and as if the time which I spent on the islands, in their forests and among their semi-savage population, had been long past.

II.—DESCRIPTION OF THE OLDER FORMATIONS ON THE ISLAND.

If one views on a general map the situation and extent of the Nicobar Islands, they evidently appear to constitute a member of the chain stretching through Java and Sumatra, and re-appearing again in the Andamans and Cape Negrais on the Arracan coast. The whole of this chain is known for its volcanic activity. I found, however, on the Nicobars, no trace of true volcanic rocks, neither could I obtain from the natives any information regarding earthquakes; but features are not wanting indicating considerable upheavals in the most recent periods, which is here so well characterised by the growth of coral life. The connection of the islands with that principal chain is also exhibited in the direction of the strike of the oldest deposits, this being from S. S. E. to N. N. W., or coincident with the line between Sumatra and Little Andaman. The hilly islands consist partly of those stratified deposits which occupied the level bottom of the sea before their appearance, partly of plutonic rocks which pierced through the former and came to the surface through that upheaval. The age of these stratified rocks will also in general indicate that of the islands; I shall call them* in the course of this paper "brown coal formation," because they often contain pieces of brown coal. Although there are no sufficient data for determining its geological age, still the few organic remains which occur dispersed, indicate not an old, perhaps a tertiary, origin. To the two above-mentioned formations has to be added a third, which is the result of the chemical and mechanical destruction of the plutonic masses; it is local, and consists of clays and pebbles derived from the under-lying strata. On some of the islands this formation has reduced the high and precipitous configuration of the plutonic mountains, and produced an undulating hilly land; it is, however, evidently a submarine deposit, and has been upheaved by a movement later than, and independent of, that which caused the principal upheavement of the islands. I shall therefore call it in the sequel "older alluvium," without any intention, however, of expressing by this a definite geological age. It is on the other hand perfectly separated from the more recent alluvium, which owes its origin to the coral-reefs, and more or less completely surrounds each of the islands as a circular flat; I shall afterwards speak of this coral-reef formation in a special chapter.

A.—Brown Coal formation.—The northern point of Little Nicobar is to some extent formed by precipitous cliffs, which expose a very good section with all the various rocks composing this formation. This part

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* See on this point Dr. Hochstetter's account further on, page 208, &c.

of the coast is about 1,200 paces long; the beds show a very steady strike, independently of the form of the hills and a dip of 20° to 25°. Proceeding from east to west, or from the more recent to the oldest strata, one chiefly meets a sandstone, which is by far the most prevalent rock of the whole of the southern group of islands. It is grey, occasionally somewhat reddish, fine-grained, and very soft. When a piece is put into hydrochloric acid it effervesces and falls to a sand of quartz grains and mica, the cement consisting of carbonate of lime with a little oxide of iron. With the exception of a few fine black stripes crossing each other in different directions, the sandstone is, as a rule, of uniform composition. The only fossils I found were some pieces of wood, which I shall subsequently mention. Some spheroidal masses seen sticking out of the cliffs and regularly arranged in lines are, however, remarkable. They consist of a much harder substance than the greater part of the sandstone, but acid acts upon them in just the same way as upon the latter. The imbedded and more solid sandstone is, therefore, identical in composition with the main mass, differing only by the calcareous cement being present in a larger quantity. It forms in this place round masses four feet in diameter; and because they resist decomposition longer, they protrude in the most varied forms out of the cliffs, and are strewed over the shore indicating the former place of the rock, though gradually they are swept by the waves to the bottom of the sea. One might at first sight suppose that these imbedded masses are, on account of their rounded form, pebbles of a foreign rock; but their composition shows that they have a similar origin with the rest of the sandstone, the only difference being that the calcareous matter which pervades the whole mass has been concentrated at certain points. The rounded form moreover could not be due to rolling about, for the concentrically laminar structure clearly shows that their external form is connected with their internal arrangement.

Further towards the west, slaty beds begin to alternate with the sandstone. They chiefly consist of a firm, bluish-green, marbly slate, which, like the sandstone, contains locally a large proportion of carbonate of lime. In acid this marl falls to clay mixed with a little mica; this rock is otherwise very homogeneous, and in it too I never observed any other organic remains than fossil wood. The thicker layers show an imperfect cleavage in the direction of the strike of the beds, sometime in a transverse direction, producing rhomboidal pieces. In the thinner layers, and, as a rule near the sandstone, the rock contains more mica and quartz grains; and there is a gradual transition traceable from it to the great mass of the sandstone.

On the western end of the said coast sandstone again prevails, and contains similar but oval masses of harder sandstone; here, too, they are scattered at the base of the cliff, and in consequence of being bored by molluscs, they assume a peculiar appearance giving them some resemblance to fossil wood.

All sections along the coast of the southern group of islands show the sandstones and slates as above described. One or the other prevails in certain localities, but there is no regularity in this. The sandstone,

however, is on the whole much more common and visible on most of the cliffs; it is everywhere of the same constitution, not the slightest change in its grain nor any passage to conglomerate being observable.

On the coast rolled fragments of a brown coal are often found among the pebbles of the more solid sandstone and coral fragments. The natives have known this coal for a long time, and brought me several samples of it, picking them up on the coral-reefs when fishing. To decide whether those fragments were really derived from the sandstone and slate formation, I first enquired of the natives where they principally found them, because they might have been brought down by a stream from the interior, and this would indicate their origin, but they only knew that they never occur inland, only along the coast all round, and not at special localities. They were also brought to me from all sides of Great and Little Nicobar; most frequently, however, they were obtained from the little Island of Trice, where I myself found numerous pieces in the coral sand. After this, I looked specially after the usual companions of coal-beds—bituminous slates and vegetable impressions, but they occurred just as little in the slates as animal remains did in the sandstone. The only trace of bituminous matter was found in the dark stripes of the sandstone; an instance, on Milu, where one of those stripes had occasioned the shifting of a thin slate layer, showed that they are due to the cracking of the sandstone through shrinkage, and to a subsequent filling in, but for the most part by the same material as that of the sandstone itself. The slates hardly showed a trace of bituminous matter. It was, therefore, scarcely expected, when I at last found a small kidney-shaped piece of coal imbedded in a block of slate which I had broken off at a cliff on the eastern side of the port. I met afterwards with several and larger pieces at different localities on Little Nicobar, Trice, Milu and Kondul; at last also I found a fossil resin in the sandstone of Milu. These coals, however, everywhere occurred in isolated pieces, one to two inches thick, and the slate or sandstone was not changed in contact with it. I do not doubt that the coal pebbles found under the cliffs had been imbedded in the same, because they resisted weathering better than the sandstone, which was washed away. All the pieces are much rolled, partially bored through by *Pholadidæ*, and appear to have been exposed to the sea for a long time. I have, therefore, used them in attempting the following description of the organic remains found in this formation:—

1.—*Fossil wood of greyish or reddish-black color.*—It is very hard and can be polished. The fracture shows isolated vascular bundles in the dark mass, and the fibres are undulating in a longitudinal direction. The specific gravity is 1·568; on combustion it gives 31·5 per cent. of a dark brown-red ash, which, besides a little iron oxide, is chiefly silica. The isolated fibres, their undulating course, and the want of annual rings of increase all indicate that they were derived from monocotyledonous trees. This also appears to be supported by the silica in the ash, which is not found in the next varieties.

2.—*Fossil-wood of a greyish-black color.*—The fracture is dull and earthy; it does not take any polish, but upon fracture close and fine

concentric lines are traceable, which are grouped into larger rings. There cannot be any doubt that these fragments are derived from dicotyledons. The largest piece shows two concentric systems beside each other, indicating a branching of the stem. The mass was porous, gave a specific gravity of 2·256, and 68·6 per cent. of a light-brown ash, consisting of iron oxide, clay and lime.

3.—*Fossil-wood of a black color.*—The fracture showed similar white isolated specks to No. 1, but distinct concentric rings, and the root of a branch indicated an origin from a dicotyledonous tree. The structure of the wood passes in some places into a black, shining, pitch coal, in which the vegetable structure is no more discernible with the naked eye. Specific gravity 1·528, dark reddish-brown ash 23·7 per cent.

4.—*Coal of a conchoidal shining fracture and deep black color.*—No organic structure is perceptible with the naked eye. I found this *in situ* on the northern side of Little Nicobar, and obtained besides numerous pebbles of it, among which there was one 8 inches long and 6 inches broad. A sample of this pebble had a specific gravity of 1·363; ash 8·8 per cent. A sample of the coal *in situ* had specific gravity 1·411; ash 8·0 per cent. The same gave, upon examination by the usual method with oxide and chloride of lead, a combustible value of 3457. By dry distillation a large quantity of sulphuretted hydrogen was produced; the distilled fluid was mostly watery, without much oil, contained carbonate of ammonia, and was quite similar to that obtained from peat in the same manner.

5.—*Coal,* also without organic structure, of a conchoidal but dull fracture; most of what I found *in situ* belonged to this variety. A sample from the north side of Little Nicobar gave specific gravity 1·338; ash 6·7 per cent.; combustible value 3760.

6.—*Fossil resin,* corresponding to amber, I only found in the sandstone of Milu. It is partly dark and pitchy, partly light-yellow and transparent, and becomes electric when rubbed. Specific gravity 1·037. It is very brittle, allowing itself to be pulverished between the fingers. Boiled in absolute alcohol, only traces are extracted from the powder. It bakes, however, in boiled ether, and what is soluble in this is again precipitated by alcohol. Boiling solution of potash has no action on it. Upon combustion it gives a smell similar to that of amber, but no acid. I did not make any further experiment with this mineral, though I have a sufficient quantity for an analysis. It appears to me to differ from the kinds of fossil resin I know of. Certainly it is derived from the same trees as the brown coal. However, there occur in the European brown coal formations a number of different substances of this kind, and there may be many to be discovered in the corresponding formations of this region, as yet so little known.

The dicotyledonous form of the fossil-wood, as well as the condition of the coal, appears to indicate a rather recent age for the formation; but the total want of other organic remains makes a correct determination of this age impossible. The most likely method of obtaining information on this point would probably be a comparison

with other brown coal formations in South-Eastern Asia. The rising demand for coal for steamers, as well as its use for railways in India, has induced the English East India Company to direct attention to the quantity of this mineral in India itself. It has been known for some time that sandstone formations with many coal seams occur along the southern boundary of the Ganges alluvium, in the Nerbudda valley, and especially in Assam, on both sides of the Brahmaputra; they partly touch the tributaries of those large rivers, and are favorably placed for carriage. On the Arracan coast, and on the adjacent islands, as well as in the province of Tenasserim, considerable deposits of coal have been discovered. The present results of the examinations have, however, not yet led to a conclusion how far these formations are related to the great carboniferous formations of Europe and America. The observations have been restricted to the thickness of the out-cropping seams to testing the value of the coal for the use of steamers, and to estimating the cost of production. For many years mines have been worked in Burdwan, and here as well as in Assam (especially near Cherra Poonjee) great preparations have been made for working. The scientific examination* of the rocks, and the organic remains which accompany the coal, is as yet mostly wanting. Perhaps also they belong to different formations, and specially is this likely in Assam, where the coal of one district is much inferior to the rest. Still most of these deposits appear to be more related to the carboniferous period than to any other. They all indicate a deposition in basins, and are characterized by bituminous shales with vegetable impressions. I had an opportunity of visiting the coal district of Burdwan on the Damuda river, and of collecting some of the vegetable impressions, which all appeared to have been derived from ferns, and of which five species are figured in Royle's work on the Himalaya. In the collection of the Asiatic Society I have seen flattened palm stems from the same locality. The coal mines west of the Ganges are also rich in iron stones; but in Assam and Arracan the coal-bearing sandstone partially rests on a fossiliferous limestone. The sandstone and shale are also penetrated with bituminous matter, and there is a discharge of oil in several localities.

It appears that nothing corresponding to these formations is to be found on the Nicobar Islands. The extreme uniformity of the sandstone and slate in the whole extent of the southern islands seems to indicate that these masses were deposited on the bottom of a quiet sea, probably not far from the mouth of a large river. There is not a trace to be found of local causes by which fragments of foreign rocks could have been brought into these deposits. The sandstone does not change in the least its fine grain from the island Trice down to the southern point of Great Nicobar. The patches of coal were imbedded without any order, sometimes in the sandstone, sometimes in the slate. They seem to me, therefore, to have been derived from drift wood, which was deposited with the clay and sand. I nowhere found what would indicate an accumulation of vegetable matter in basin-like depressions, where plants would have

* Compare various papers on the age of the Indian rocks in the "Memoirs Geological Survey of India."—*(Translator.)*

been growing *in situ*, and through which the surrounding clay would have been penetrated with organic matter, and mixed with fragments of plants. The question, therefore, still remains open, whether the brown coal occurs in considerable quantity, as really seems to be indicated by the number and size of the collected pebbles.

When and how the carbonate of lime has been secreted from the sea-water, converting sand and clay into sandstone and slate, is indeed difficult to decide. I mentioned its concentration around certain points, outside of which it is again uniformly distributed. In this way more solid portions have been inbedded in the softer sandstone. On the N. E. point of Little Nicobar it formed very fine spheroidal masses, which are arranged parallel to the interstratified slaty-beds In other places they are elliptical, approach each other nearer, and are sometimes connected by a band of the same hard mass. The question of the accumulation of lime is connected with the general question regarding the changes which have taken place in the interior of apparently solid rocks. It recalls the concentration of silica into flint in chalk, and especially the formation of small isolated patches of crystalline limestone in compact limestone, without any apparent plutonic cause. I will, subsequently, when speaking of the most recent coral limestone, relate similar instances. The parallelism of those bands with the slaty strata shows that they originated in certain directions, in which already some kind of secretion had taken place, and it may also be explained by the crystallising power in connection with a small quantity of some dissolving agent acting for a long time.

The numerous slaty-beds gave opportunity for observing the stratification at several places. The appended map shows that the great mass is upheaved along one line which passes through the Islands Milu and Kondul. On both of them I found that the strata change from a western to an eastern dip; also that this line which coincides with the greatest longitudinal extent of the islands is the middle line of the whole system. The stratification of the rocks of Katchall, as far as I was able to observe them from the sea along the cliffy coast, also appears to exhibit this relation. The beds there showed a dip towards the west, and, from the plutonic rocks occurring, to the east on Nancowry. In the south-eastern part of Great Nicobar, however, great local variations take place, probably also caused by the plutonic rocks in those localities.

B.—Plutonic Rocks.—The up-heaval of sandstone and slate beds, which previously had occupied the bottom of the sea, appears to have been accompanied by the outburst of the plutonic rocks, occurring partly on the south-eastern sides of Great Nicobar as isolated cliffy islands, partly in large quantities towards the north, where, suppressing the stratified rocks, they almost entirely form the islands. In general these two formations are not found in immediate contact, being separated by the sea. But on the western side of Terressa I observed a small patch of sandstone of the same type as the soft sandstone of the southern islands, only slightly hardened and altered in consequence of

the plutonic rocks which form veins in it. This fact, as well as the above-mentioned irregularity in the strike of the strata towards the south-eastern part of Great Nicobar, seem to me to prove that the plutonic rocks are more recent than the sandstone. The former exhibit nearly everywhere a very fine-grained, nearly compact fracture, in which the various constituents show very indistinctly, thus making a close determination very difficult; they have usually a serpentine-like appearance, and contain a larger or smaller quantity of water, chemically combined. Where the structure is, however, more distinctly crystalline, they pass partly into a more or less fine-grained gabbro, partly into diorite, or diorite-porphyry. In smaller quantities also syentic and euritic rocks are to be met with.

1.—*Gabbro and Hypersthene-rock.*—On the Island of Terressa I found the bed of a stream full of pebbles of a coarsely crystalline rock. The inaccessibility of the country prevented my seeing the rock *in situ*. But the fragments were partially diallage of a light or yellowish, or brownish color, with only a small proportion of a compact, semi-translucent yellow, felspathic or serpentine-like mineral. On Carmorta I also found pebbles of a coarsely-grained gabbro, in which the felspar was prevalent of a greenish-white color, translucent, and either compact or crystalline. Some samples of this gabbro were remarkably like the similar rock occurring in the Harz mountains in Germany. On the same island, also on Bompoka, I met finally with a rock, which, upon closer examination, contained distinct little flakes of diallage inbedded in a compact felspathic mass; and thus I was justified in regarding the rock as a fine-grained gabbro. These as well as the other pebbles showed also some pyrites in them.

2.—*Diorite and Dioritic porphyry.*—Some samples of the rock *in situ* on Carmorta, from which I obtained the above-mentioned fine grained gabbro, did not show any distinct flakes of diallage. They have a dark green color, and resemble in some respects a compact greenstone from Bornholm. The greater part of it seems to be felspar, which shows itself occasionally in small shining needles, and there is also a mineral more like hornblende than diallage. In this dark mass can occasionally be observed larger crystals of a light green felspar, giving the rock a porphyritic appearance. Pyrites is found everywhere in small quantities, and the fine cracks are filled with a zeolitic mineral, which is easily soluble in muriatic and nitric acid.

The specific gravity of these rocks varies between 2·789 and 2·823 An analysis of the dark-green mass gave—

Silica	48·90
Magnesia	3·10
Lime	4·43
Alumina	9·89
Iron-oxide	22·71
Water	4·03
Soda	93·06

The missing 6·94 per cent. is chiefly soda, in the determination of which I did not succeed. It must also be noted that the iron, determined as iron-oxide, was partially derived from pyrites. Potash was not found in it, and partly for this reason, because this and the next rocks were decomposed in muriatic acid; the felspathic constituent would seem to be labrador.

3.—*Serpentinous Gabbro and Diorite.*—In immediate connection with the above are rocks of a dark greenish grey color, in which, however, the constituents could hardly be recognized. I was often reminded, when observing them, of the description which Darwin gives of the rocks of St. Paul, (*On Volcanic Islands*, page 31). Some appeared to be penetrated with a light green chlorite. These were especially found on Bompoka and Tillangchong. They all contain water chemically united and some pyrites interspersed. The mass powdered finely was partially decomposed by muriatic acid, and gave alumina, oxide of iron, lime, magnesia, and soda; some exhibit a polished surface with a thin layer of yellowish, transparent serpentine-like substance of small hardness. I suppose these rocks have a similar composition to that of the crystalline ones, only that the constituents could not separate sufficiently from each other. They may, therefore, also vary in their composition, as those do in the relative proportion of the felspathic, diallagic or hornblendic minerals; all contain magnesia. A sample from Bompoka gave 8·28 per cent. of magnesia, 2·72 per cent. water, and a specific gravity of 2·785.

4.—*Compact rocks without Magnesia.*—Besides the fine-grained diorite, I found on Carmorta a very different compact rock, resembling at first sight eurite. It was separated from the preceding rocks by thick masses of conglomerate, so that I have not seen them in immediate contact This eurite is of a brownish red color, and forms a very uniform mass; only on close inspection there are little greenish or dark brown specks observable in it. Before the blowpipe it melts easily on the edges The specific gravity varies between 2·666 and 2·761; but when pulverised and washed a coarser and harder residue remains, which has a specific gravity of 2·887. The finer powder which seemed to compose the lighter colored mass, and, therefore, had a smaller specific gravity than 2·666 or 2·761 gave by analysis:—

Silica	46·25
Iron-oxide	14·71
Alumina	19·02
Lime	7·70
Soda	6·18
Water	5·04
	98·90

The iron was again here partially derived from the pyrites. Of magnesia, there were only traces, and in this the rock differs essentially from the former. The residue after washing appeared to consist of quartz, red hæmatite, and magnetic iron ore.

A mass similar externally to this euritic rock, I found *in situ* on the eastern side of Nancowry. It was also of a brownish red color, perfectly compact, but much harder than the former rock. The powder effervesced strongly with muriatic acid, and contained about 10 per cent. of carbonate of lime, but no trace of magnesia. Upon close inspection the carbonate of lime was observed to occur as fine veins in the mass. A like rock from Tillangchong was very similar in appearance, but was softer, and contained the lime equally distributed throughout the mass. Professor Blum of Heidelberg, to whom I showed a piece of it, considered it identical with a schaalstein occurring in Germany.

5.—*Veinstones and subordinate masses.*—It has been already mentioned, that in the crystalline as well as in the compact rocks, pyrites occur everywhere in small quantities, and that the gabbro and diorite on Carmorta contain in fine cracks thin plates of a nacreous zeolitic mineral. These minerals occur in greater quantity in veins which pass through the rocks, but in general are not of any considerable thickness.

Quartz in its varieties forms the principal mass of the veins. On Tillangchong there was a vein of red jasper with some white quartz protruding one foot out of the soil, formed from the decomposition of the rocks. The shore was here quite covered with pebbles of jasper. In other places the silica appears to have been more uniformly retained by the basic constituents of the rock, giving it what little hardness it possesses. Smaller veins of white and partially crystallised quartz were also very common. On Tillangchong they contained at the same time calcspar. In the bed of a stream on Bompoka I found a large quantity of fine crystals of quartz.

On Carmorta the serpentinous gabbro was penetrated with veins of quartz with some iron and copper pyrites. I should doubt, however, that copper occurs in such quantity as to be of any practical value. But it is not improbable that these veins contain precious metals. The occurrence of gold in similar rocks, and its frequency in the same chain of mountains to which these islands belong, especially on Sumatra, is sufficiently known. There was a story in India that the Malays obtained gold from the Nicobars. I was unable to get from the natives any information on this point, and they would certainly have concealed it even had it been the case. That metal is known, being washed by the natives in the rivers of the Malay Peninsula and of Sumatra; but its production is probably of little importance for the prosperity of these countries. An older alluvium derived from these plutonic rocks occurs, as already mentioned, on Carmorta; and more recent alluvium may be found on Great Nicobar.

In the *eurite* above described occurred veins which distinctly indicated their origin by the action of water upon the cracks of the rock. They mainly consisted of cemented fragments of a half decomposed eurite; the cement being a white crystalline mass, partly calcspar, partly the zeolitic mineral, and no doubt deposited from the water which

had decomposed the broken eurite. The zeolitic mineral is a silicate of alumina and lime with a large percentage of water, but I have not as yet obtained it free from carbonate of lime, so as to determine its characters more correctly.

6.—*Syenite.*—A sample of the soil from the point of Terressa brought to me was a decomposed fine-grained syenite. On the eastern side of this island I met on the coral reef with pebbles of a remarkably coarse-grained, quartzitic syenite, and of a melaphyr-like, or perhaps doleritic rock, and also near these fragments of the above-mentioned eurite. From want of time I could not reach the nearest hills beyond the stretch of alluvial land, but the rocks very probably occur there *in situ.*

These are some of the rocks of which I had an opportunity to collect samples. I must, however, regret that the greater part of the collection, and specially the pieces which I brought from the last journey to the northern islands, were unfortunately lost. In an essay which I sent from Nancowry to Dr. McClelland in Calcutta, and which he printed in the July number of his *Journal of Natural History* for 1846, I have called the plutonic rocks of the Nicobars a serpentine or gabbro formation. I had not then had the opportunity of closer research, and of a comparison with typical specimens of those rocks. The changes and additions which I have made in this present description are chiefly based upon some small fragments which I brought home with me and analysed. I must also regret that I have so few data to exhibit the relative distribution of the various rocks. The greatest obstacle to this was the want of natural sections, on account of the dense forest vegetation, the separation of the older rocks from the coast by the large intervening extent of alluvial ground, as well as the short time which I was able to spend on the plutonic islands. Generally I only succeeded in reaching the nearest point where anything was exposed; then hastily broke off a few samples, made a few observations on the locality, and had to hurry again on board ship. I can only say that the serpentinous magnesian rocks form the principal mass. I further conjecture that the corresponding crystalline diorite and gabbro partly occupy the interior of these masses, and partly penetrate in veins on the outer covering of compact rocks. I have already noticed that the sandstone and slate formation upheaved or pierced by the plutonic rocks had formed the bottom of an open sea. The circumstance that those compact rocks all contain water chemically combined and much pyrites, with no traces of porous slaggy rocks, also appears to me to be in favor of the opinion that they were upheaved under the pressure of a large mass of water; the difference of the more compact or more crystalline structure would then be explained by the quicker or slower cooling of the rocks.

Finally, I have to mention that the plutonic masses in several localities where they appear on the surface, are surrounded by a conglomerate, which cannot be accounted for by the action of water, but only by the movement of the lower melted mass after the consolidation of the outer

crust. This plutonic or friction-breccia was observed by me on Carmorta and also on Great Nicobar, in connection with the serpentine as well as with the euritic and schaalstein-like rocks. They were in these places cracked in all directions from without and inwards, and at top there was piled a mass of sharply angular blocks several feet in diameter, heaped together nearly without any cementing substance. The size and form of these blocks made it impossible to explain their deposition by water; moreover lower down and further in it plainly seemed to consist only of a shivered and split-up mass, beneath which the point of the under-lying continuous rock was visible like a cone.

C.—Older Alluvium.—On Bompoka and Tillangchong the plutonic rocks are best exposed, and form precipitous, and as compared with the size of the islands, high hills. I mentioned, however, already that Carmorta, Nancowry, and Trinkuttee are distinguished by a flatter and undulating surface, because the plutonic rocks are here overlaid by more recent sedimentary deposits. Where the hills of these islands are exposed along the shore by precipitous cliffs, they are generally distinguishable from a distance by their remarkable light color. Upon closer examination I found them to consist principally of a kind of clay which I shall describe subsequently; it was, however, everywhere associated with pebbles and a conglomerate of the serpentinous rocks. A section exposed at the narrow entrance to the deep and spacious Bay of Ulalla, on the west side of Carmorta, gave me the first opportunity of exploring this clay and pebble formation.

The small conical portions A and B, (*see plate Fig.* 2) consist here of plutonic rock; A being a fine-grained greenish diorite or gabbro; B the reddish euritic rock. Both form, so to say, prominences of a submarine plutonic mass, and each of them is surrounded by a coating, *a a* & *b b*, of friction-conglomerate of the same rocks. But between them and outside of them there rests a conglomerate C, which is evidently of quite a different nature. It consists of much smaller, and more or less rounded fragments of the reddish and greenish rock, mixed in about equal proportion, and cemented by a clayey and calcareous substance. The greater the distance from A and B the smaller become the fragments, and the larger the proportion of the cement. This conglomerate is therefore certainly deposited by water; the fragments were derived from *a a* & *b b* rolled up by the action of the water, mixed and deposited at greater or lesser distances. The size of these fragments also shows that the force of the water must have been considerable, as it can be produced only by the waves at the surface of the sea. The two prominences A and B, or rather some other of the same kind close by, were then 100 to 200 feet lower than they are now, and were exposed to the destructive action of the breakers. The conglomerates form in this western part of the island the predominant rock of the hills. They may especially be observed on both sides in entering the harbour of Nancowry from the west. The fragments sticking out of the cliffs are occasionally so large that they can be distinguished from a distance at sea. As the cement contains a large proportion of carbonate of

lime, stalactites are found in the many excavations formed by the sea along the coast. The entrance to the harbour is marked by two small rocks, which are excavated from below, and form, so to say, two gates.

The cement of this conglomerate, as just mentioned, is a calcareous clay. It is evidently the result of the chemical decomposition of those rocks, just as the fragments were produced by their mechanical destruction. Further to the east those chemical products are almost exclusively present. I select here, as a sample, a section which can be regarded as representing what can be seen all round the island with very few modifications.

This declivity is seen on the northside of the eastern entrance into the Nancowry harbour, below the hills on which the colony "Frederick's höi" and the Austrian settlement was situated. It consists in the upper parts from B to C entirely of the clay immediately to be described. But in the lower part A B, it is formed of a number of horizontal strata, which partly consist of a conglomerate of fragments similar to those near Ulalla, partly of a very soft ferruginous sandstone, (*see plate Fig.* 4.)

The clay is white or light yellow at the surface exposed to the air, but internally, where it has not yet been affected by decomposition, it appears of a grey color. It forms a soft, light spongy mass, absorbing water very rapidly, and not unlike meerschaum at first sight. Under the lens it appeared perfectly homogeneous, and nearly without a trace of mica. Sometimes it effervesced with acids, at other times it did not. It can be pulverised easily, and when washed it remains for a long time suspended in water. I failed to decompose it by boiling in concentrated muriatic or sulphuric acid, by which only traces of basic constituents were extracted. It always contains magnesia. Before the blowpipe at first it blackens and then melts on the edges. An analysis by melting with carbonate of soda gave—

Silica	72·2
Oxide of iron	8·3
Alumina	12·3
Magnesia	2·1
Water	5·6
	100·5

The clay is sometimes split, and the cracks are then filled with fine crystals of gypsum, and plates of hydrous iron-oxide; in the same places the cliffs exposed to the sun are covered with an effloresence of fine needles of sulphate of magnesia. The formation of these products is easily explained, by considering that the stones in the conglomerate contain much pyrites, and that in this, as well as in the clay, carbonate of lime and magnesia occur, consequently the gypsum is always accompanied by oxide of iron.

The composition of this clay, and specially its percentage of magnesia and want of mica, make it already probable that it originated in a chemical decomposition of the said serpentine and euritic rocks, and

by the extraction of alkalies from them. Quartz sand must have been produced by this process; and it is found accompanying the clay beds in the sandstone which alternates with the conglomerate in the lower strata in the section. The sandstones vary a great deal in the size, in the grain, and in the quality of the cement. The large roundish grains of quartz are sometimes cemented by a very small quantity of the clay, sometimes the sandstone is very fine-grained and friable, and the ferruginous cement appears to have originated from a subsequent decomposition of the serpentine fragments which were deposited with the quartz. Sandstone containing mica is rarely met with. As quartz occurs in these plutonic rocks, only subordinately in veins, and does not form an essential constituent of them, as in granite, these sandstones are always very subordinate in development to the clays.

These clay and sandstone beds are found all round the coasts of the Islands Nancowry, Carmorta and Trinkuttee, the plutonic rocks rising out of them only locally, generally surrounded by conglomerate, from which portions extend all through the clay masses, especially through their lower strata. The strike and dip of the sandstone is by no means constant, but in general they approach horizontality. It is only quite close to the ridges of plutonic rocks that the conglomerates are prevalent. They are seen to alternate with the clays without any certain rule, occasionally a single rounded fragment of diorite or gabbro is met with in the midst of the fine clay, and the whole has the character of a littoral formation, such as might be laid down on the sea bottom in the vicinity of a cliff exposed to breakers.

When I add that Pastor Rosen, one of the former colonists, when attempting to dig wells in the valleys between the clay-hills, always at a certain depth came on a hard rock, which could only be worked with sharp instruments, and thus was a great impediment to further excavations, I may justly conclude that the clay and pebbles everywhere rest at a depth of from 100 to 200 feet on a plutonic mass, which is mostly situated below the level of the sea, and appears only locally near or at the surface. The following section may give an idea of the geological composition of these islands (*see plate Fig.* 3) :—

Here *p p* indicate the subjacent plutonic rocks, *t t* the clay masses, and *c c* the detrital conglomerate. The manner in which I imagine that these deposits have been formed may easily be represented from what has been described, thus,—when through the upheaval of the coal-bearing sandstone and slate, and the protrusion of the plutonic masses, the greater part of the islands was already formed, there existed, in the position of the Islands Nancowry, Carmorta and Trinkuttee a mass of plutonic rock with numerous points above water, just as may now be seen round Tillangchong. These several islands were exposed to the destructive action of the atmosphere and of the water. Through the decomposition of the augitic and felspathic minerals originated the fine clay, which was washed away by the sea and deposited between the islands. (I have found quite a similar clay in the bed of a stream on Bompoka, being still in the course of formation by the decomposition of the

serpentine rocks through which the stream passes). At the same time, however, the waves broke off large pieces from the cliffs, depositing them at no great distance. It now depended upon the strength of the waves at any spot, whether conglomerate, or sandstone, or clay was formed there. The irregularity in stratification often indicates littoral deposits, which must have originated under such conditions. The cliffs either totally or partially disappeared, and their remains have filled out the hollows between them; the ground was then raised a few hundred fee by a subsequent, rather uniform, upheavement, and appeared above the sea.

On the accompanying geological map I have marked the Islands Car-Nicobar and Chowry as belonging to this formation, although I have not myself visited them.* I base this partly on the descriptions of others, partly on a few samples of the clay from the hills of Car-Nicobar, and partly upon the facts that the natives of Chowry make pottery, which appears to consist of the same clay as that from Carmorta. However, I am not entitled to lay much weight upon these suppositions. I have also to mention that I have not found any kind of fossils in the clay with the exception of a block of hornstone, which may have been a piece of silicified monocotyledonous wood; I was, however, told that small bivalves occur in the clay of Car-Nicobar. In any case, the fossils cannot be common. Whether the sea in the neighbourhood of those rock-islands had then not the same favorable conditions for the development of a rich animal life as it has now, or whether the animal remains were destroyed in some way, or whether they are hidden in places which I had no opportunity to examine, I must leave for the present undecided.

III.—THE ISLANDS IN THEIR PROGRESSIVE FORMATION, MOST RECENT ALLUVIUM, AND PHENOMENA OF UPHEAVEMENT.

I have attempted to give a description of the geological constitution of the hills which form the greatest portion of the Nicobar Islands. In the most recent period, the beginning of which is so well characterized by the introduction of the coralline life now inhabiting those seas, several circumstances occurred to alter their form and to increase their area by a flat ground, partly surrounding the hilly land and partly filling up the small patches of sea between them. The material for this was partly derived from the streams bringing down sand and clay from the hills, but the greatest portion of it was produced by corals. Thus originated two kinds of alluvium, so sharply defined one from the other that the conditions which favor one exclude the other. I shall, therefore, in the sequel call the former fresh-water alluvium, and the other, that produced by coralline life or the coral limestone, marine alluvium, for, although the first was originally deposited in bays, it could not be formed there without the supply of river water.

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* See Hochstetter's account further on, page 208.

On islands of such a small area, the largest being not more than about 20 (geographical) square miles, and where the breakers of the sea oppose the afflux of river water and partially carry away all particles they bring down from the hills, there are only few places where the conditions required for the formation of such fresh-water alluvium are present. Only where there were bays extending deeply inland, and surrounded by hills, and where the force of the waves and of the surf had nearly disappeared, could accumulations of river deposits take place. I had an opportunity of observing two formations of the kind on the south of Great Nicobar and on the north of Little Nicobar, but I do not doubt their existence in many other places. Great Nicobar terminates on the southern side in two diverging hill ranges, forming at their extreme ends a bay, but including further up a flat land of the form of a triangle, two to three miles long, less than half to a quarter of a mile broad; which is watered by the river to which it owes its origin, and which daily increases its extent by the deposits brought down from the surrounding hills. The extreme end terminating on the sea is thus still in progress of formation, swampy, and regularly flooded over by brackish water during high tide. This ground is almost exclusively covered with *Mangroves* and *Rhizophori*. The outer margin of this mangrove forest along the river reminds one in some respects, by its fresh green foliage hanging down to the water, of our elder-bushes, sometimes also a small *Acanthaceous* plant may be seen there with beautiful blue flowers and thorny leaves very like those of the holly. But in the interior the mangrove trees stand perfectly bare out of the mud, supported by numerous air roots variously spreading over the ground; the lateral branches mostly fall off, or are broken off, the slender stems up to the large crown of foliage from which hang long air-roots, and which throws such a shadow over the saline morass that nothing else can grow on it. The ground, flooded by brackish water is covered with a very large number of a species of *Cerithium*, and inhabited by numerous crabs. On Great Nicobar this mangrove swamp had, from the coast inland, a breadth of about a quarter of a mile. Farther up the valley the land rises and is only flooded by the river when its waters are swollen during the rainy season. The vegetation becomes here at once more varied, and is specially characterized by the stemless palm, *Nipa fruticans*; it grows quite to the edge of the river, so much so that the large fruit hangs half in the water. At last, on both sides, there rises a small grassy edge between 8 and 10 feet high, and beyond this the primeval forest of the Nicobars stands in its full development; its peculiar ornament, the *Pandanus* especially forming beautiful groups. The lofty trees along the river are partly covered with climbing bamboos, and are set off below by smaller bushes, among which beautiful tree-ferns are conspicuous.

The formation of this flat land appears to have begun in the inner corner of the original bay, and thence to have gradually progressed. The mangrove swamp always extended first, encroaching upon the sea, while along the inner side the soil was raised and changed into dry land covered with a rich vegetation. There must, however, be a limit to this extension into the sea, as soon as the bay becomes so wide and open that the fine sand brought by the river is taken up by the

waves and disappears in the sea; while on the other hand the breakers of the pure salt water favor a perfectly different formation, of which I shall speak immediately. This limit appears to have been reached on Great Nicobar. For the bay is here so large and open that heavy breakers beat everywhere against the shore. The coral-reefs had already approached from both sides of the coast in front of the flat land; a narrow strip of dry coral land had already separated the *Rhizophorus*-swamp from the sea; and at the mouth of the river, where the reef is interrupted on account of the corals not being able to live in brackish water, the sea had thrown up a bank of coral sand.

The alluvial formation on the northern side of Little Nicobar offers a repetition of the same conditions on a smaller scale, but with this only difference that the above-mentioned limit has not yet been attained there. The country opens through the *Rhizophorus*-swamp into a small narrow bay, to which the sea waves scarcely have access, and where corals cannot build reefs. The swamp and the bay almost insensibly pass one into the other, and the boundary is only indicated by the *Rhizophorus*. But when this basin is filled out, further formation will be cut of by the breakers of the open sea and the coral-reefs.

These two alluvial basins are solely composed of the products derived from the decomposition of the calcareous sandstone and slate formerly described. They, therefore, consist of strata of micaceous sand and clay, and offer, no doubt, very fertile soil. However, I should suppose that in the south-eastern part of Great Nicobar plutonic rocks exist, and that in the interior of the two bays a gravelly ground of a different character had been formed.

Where the outflow of fresh water is smaller, coral-reefs appear with their kind of alluvium, which occupies a much larger extent around the islands. These reefs offer an excellent example of the "fringing-reefs," so called by Darwin. As these are sometimes upheaved above the level of the sea, and thus can be observed as to their variations of structure and their mode of contact with the underlying rock, I believe that they are of the greatest importance as regards the theory of these formations in general. What I can communicate here is unfortunately only the fragment of a task, from the completion of which I was prevented by our speedy departure from the islands. I had till then made the older rocks the subject of my researches, but, as I had to pass the coral-reefs every day on my excursions, I think that I became almost involuntarily acquainted with their chief peculiarities. Among others I had especially occasion to observe the coral-reef formation of the Island of Milu, because its features can be considered as normal and a repetition of what with slight modification is to be found on the other islands. I therefore select it for more detailed description. I have made as good an attempt as was possible, with the many local difficulties in the way, to represent this formation on the annexed geological map.

The island consists of a number of sandstone hills, differing in height from 100 to 150 feet, and of a flat alluvial tract stretching from the base of those hills towards east and south. The whole is covered with

thick forest; only the external margin of the flat and is occupied by cocoa-palms. From there, as well as from the base of the hills where they reach the coast, extends the true coral-reef, lying dry during low water, while during high tide the waves reach up to the cocoa forest, or to the cliffs. The formation of the flat land generally began at the base of the hills and gradually progressed in all directions, while at the same time the reef constantly increased. However, before we consider the manner in which the new land progressed, I have to mention a gap in the circular zone of the original island, and which appears in the middle of the present island as a swamp. The fresh water which collects on the surface of the hills, and flows into the sea, prevents the development of coral life in those places in proportion to its quantity. I attempted to show in the preceding account how, in the bays which extend far inland, and which are gradually filled with detritus from the mountains, coral-reefs are perfectly excluded. But even in the smaller and more open bays, where there are no conditions for filling up by fresh water alluvium, the coral-reef cannot extend freely in. Along its inner side, next the shallow and less troubled brackish water, a mangrove-swamp forms, just as on the outer edge of the fresh water alluvium. I was, indeed, only able to observe this in few places; for, as a rule, the reefs have completely enclosed the original bay, as for instance on Milu, and that inner part separated from the sea by the new flat land has acquired a totally different character. Partly on account of that separation and partly on account of the filling up with detritus, the free access of salt water is gradually cut off. That there is any upheaval of the ground necessary for this result I hardly believe; there is no certain evidence of such on Milu. The swamp then forms a basin, which becomes filled by the drainage from the surrounding hills, letting out the superfluous water through a narrow channel into the sea. As soon as the brackish water changes into fresh water, palm vegetation takes the place of the mangroves. On the drier places a small *Areca catechu* grows among the *Pandanus*, but in the middle of the swamp the latter only are predominant. They generally stand in small groups, and are supported by numerous air roots. Their stems attain a height of from 30 to 40 feet; and I have seen fruit on them which were 1½ feet long. The juicy condition of all parts of this plant seems to show that it is well fitted for the place. I have also seen on the other islands similar *Pandanus*-swamps, and I suspect Roxburgh refers to these localities when he states in his *Flora Indica* that he must conclude from existing accounts that the *Pandani* of the Nicobar Islands attain double the dimensions of those occurring anywhere else in India. The soil from which the air-roots protrude consists of decomposed vegetable matter, and although it would be bold to compare these swamps with peatbogs which flourish at such a distance from the tropics, they do appear to consist on the surface of similar masses. I have not examined the thickness of this humus-like mould; it is certainly not considerable, and I should be disposed to believe that below it, remains characteristic of brackish water would be found, and below that again marine fossils. I do not know how it came that, when observing this small swamp with its rich vegetation of palms, I was reminded of those extensive swamps of former times, in which a still greater heat and humidity, combined with other conditions, probably unknown to us, had made

possible the accumulation of vegetable matter, the remains of which we now use as coal. Professor Forchhammer gave his opinion, and as regarded the conditions in England, showed that this was probable, that the coal measures which occur in a basin of mountain limestone had originated in lagoon swamps formed by coral-reefs. I will not attempt here to argue this; but I may be permitted to direct attention to an analogy which can be drawn from this particular case. Supposing the Island Milu sank so that the flat coral land were placed under water, the corals would then build from the extreme edge of the reef towards the surface, and would form a barrier reef separated from the island by a canal. The sand and clay brought down from the mountain by the rain would cover the swamp and its plant-remains, and at last fill the basin, whereupon the swamp-formation would begin again. Similar periodical depressions repeated would at last produce alternating strata of sand, clay, and coal-bearing masses containing either marine or fresh-water remains, the whole resting in a basin formed of rocks with exclusively marine fossils.

I mentioned that the swamp has an outlet to the sea towards the east through a small stream. The influence of fresh water upon coral life is still seen at the mouth of that stream, in the interruptions of the reef. Similar interruptions are often repeated on the coast of the island, and are most important as landing places for boats. One might think that the swamp formation following the stream must extend externally over the whole of the new flat land. But it must be noticed that the conditions favorable to the growth of coral-reef increase in proportion as these extend outward. A small stream may sometimes change its course and its outlet, and in such cases former gaps in the reef are filled up.

To illustrate more fully the process of formation of coral land, I have represented a section of it (*see plate Fig.* 5), extending from the base of the hilly land from which it started, on the line A B C, on the northern side of the island.

I must make a preliminary remark that the whole of the limestone formation below the other deposits, consists of four beds, which, indeed cannot be observed on Milu, but the nature of which may be partly assumed from its known mode of production, and partly from direct observation on the northern island, where considerable upheavements have taken place. The lowest of these beds *m* is a conglomeratic limestone; the middle and thickest bed *n* is the true coral limestone, built up by the corals themselves; the upper bed *o* is again conglomeratic limestone, and on this rests lastly *p*, composed of detrital matter arranged as successive banks of sand. The surface A B of the last beds is quite converted into dry land, covered with forest, and united with the island. The surface B C D., however, is either permanently or periodically covered by the sea, and forms the true reef. As soon as the waves reach the point C, heavy breakers begin, which may be heard at all times, even during calm weather, along the coasts of the islands. The great mass of water, which here meets a solid object, rises to a certain height and then falls over, continuing its motion over the surface B C. At high-water the waves reach to the sandbank at B, under the cocoa-palm forest,

and accumulate there any fragments they may have carried along. During the ebb, however, they disappear near C, and it is then possible to go up to this spot. This space B C, on the exposed surface of the upper conglomeratic bed, is slightly inclined towards the sea, according to its width, and the difference of level between low and high water. This can be observed at the time when the water retreats, and at last only reaches the point C. It is found everywhere to consist of a compact limestone produced by cemented fragments of corals and shells. Walking on this area during the ebb one sees it everywhere covered with animals left behind by the sea. Just as one meets under the cocoa trees along the coast various forms of *Pagurus* inhabiting empty shells, one finds here an extraordinary number of crabs, among which some are distinguished by their long and thin legs, and the rapidity with which they run along sideways. In the numerous small hollows fishes and sometimes sea-snakes occur. But among the numerous polyps and mollusks *Holothuriæ* are particularly distinguished. There are at least thirteen species found in the neighbourhood of the island; several of them are used for the well known *trepang*, for the preparation of which the Malays visit the island.

The rest of the reef C D, or the exposed surface of the true coral limestone, which is always under water, is the true seat of coralline life, and from it the whole of the limestone formation originates. I have already alluded to the difficulties which are experienced in the observation of this area. Its upper horizontal portion is covered with corals, which I believe mostly belong to the *Heteropora* group. They are distinguished by very short and stout branches standing on a horizontal plate in perpendicular positions, and being mostly all of the same height; sometimes even they cover large spaces behind C; they are then all dead and brittle; although only partially covered by the water during the ebb, they appear to stand on the same places where they were originally growing. I cannot say whether, since that time, a slight upheavement of the island has taken place, or whether they grew up at a time when the water here stood higher. Darwin mentions similar dead branching corals which he found on the inside of an atoll-island, and which were also above the level of the water; as no upheavement could have taken place on such an island, he explains the former higher level of the water by a change in the form of the island. On the reefs of the Nicobars the water can reach a higher level only periodically during the S. W. monsoons; but it is also to be taken into consideration that, where breakers are constant, as on the outer margin of C, the surface may remain permanently covered by the waves which rise up there; although it stands somewhat above the low water level of the sea if still, and that the surface inside C, now covered with dead and half-dry *Heteropora*, once formed the outer edge, at the time when the point C had not, by the growth of the corals, reached so far out. Wherever the breakers are less heavy, and allow access in a boat, the area C D can be observed on account of the extraordinary clearness of the water. It is then to be seen that the principal mass of corals covering it have a convex surface; some of them may belong to *Astrea* and *Meandrina*; but I believe that most of them are those kinds of *Porites* in which the

branches become obsolete, and a rounded surface is produced. I remember having seen a splendid block of *Porites* of that kind on the opposite coast of Little Nicobar; it stood like a small rock isolated in a channel of the reef, and one could pass in a boat all round it.

It will thus be clear from what I have stated above how, in consequence of the coral growth, the whole formation must increase from C D, and progress in a horizontal direction. Although the building-corals are exclusively restricted to the side exposed to the breakers, and thus only grow up in the latter, it still happens that some of them are locally broken off by the force of the water. Probably this is specially the case during heavy storms, and the immediate cause may perhaps be that the coral becomes brittle after the death of the animal. While, therefore, new generations are building over C D, and the underlying parts are gradually changing into the true coral limestone, there is produced at the same time a quantity of fragments which serve for the formation of the upper and lower conglomerates. Some of these are carried forward by the waves that break over the point C, are partly deposited as sandbank at B, and partly spread over the area B C, when they become *locally* cemented. The circumstance that this area is alternately overflowed and left dry, and is covered during the greater part of the day by shallow tepid water, certainly facilitates the solution and the distribution of the carbonate of lime, which cements the fragments. The conglomerate thus originated first fills up the hollows between the upper branching corals, and then covers them to a thickness which, as a rule, corresponds to the difference between high and low water. Perhaps the greatest part of the fragments fall to the sea-bottom in front of C, covering this here for some distance from the reef. Thus, then, as the corals build over these fragments, it follows that a conglomeratic band is formed between the underlying rock and the true coral limestone.

In both limestones, that composed of fragments as well as that of united corals, the original organic structure has undergone alterations through the slow but long continued influence of a dissolving agent. The cellular mass is thus more or less changed into a crystalline limestone, and the interspaces are filled up with calcspar. It is possible that the carbonic acid, produced by the decomposition of the animals, also favors the solution and distribution of the carbonate of lime. I had the opportunity of collecting a sample, which shows this gradual disappearance of organic structure; the most common is a compact limestone in which hollows with traces of corals and shells occur, but from this a gradual change is traceable into a fine-grained, and again into a very course-grained crystalline limestone, the cavities of which are filled up with rhombic crystals of calcspar. It would, under these conditions, be difficult to decide whether the limestone is a compound of fragments, but for one circumstance that always characterizes the conglomerate, namely, the admixture of pieces of older rocks on which the corals built. Looking on the map at the Island of Milu, we observe that the hills in some places, especially towards the north and west, extend out to the reef, without being separated from it by an area of flat ground. They here form precipitous cliffs, from which the waves break off fragments,

spreading them over the reef, on which they become cemented with the upper conglomerate, or they fall down from the reef and thus come into the lower conglomeratic mass. The nearest part of the horizontal area of the reef below such precipitous cliffs, as for instance near F G (see map) forms a horizontal section through the sandstone and slate on the same level with the coral-reef in front of it, and gives the means of direct observation of the strike of those beds. At these places the reef has not yet attained the width which is required for the accumulation of a sand bank and the formation of new land; but round the base of the cliffs at the N. E. point, the sea has already thrown up a semi-circular barrier of coral fragments, soon changing to dry land, and thus separating the cliffs from the sea. I have at other points noticed such retired cliffs now separated from the breakers by flat land covered with forest.

While, in the manner above described, the reef increases on the seaward side through the growth of corals, and the formation of the two conglomerates, the sand bank at B, and with it the dry land, can also increase without any necessity of an upheavement through subterranean forces. If this took place at the same rate as the corals build externally, then the distance between B and C would remain constant for the same locality and under the same conditions. I believe, however, that this is not strictly the case, and that there are some accessory circumstances, which I do not clearly understand: for the breadth of the reef varies even in places where the surf appears to be equally strong; and it is sometimes in a direct, sometimes in an inverse proportion to the strength of the breakers. Darwin supposes that at the atoll-islands, where land is only formed in this way, and no upheavement takes place, the heavy breakers accumulate fragments above the usual level of the sea, while the daily currents partially carry them off again, and that periodically during heavy storms and high floods, while the reef increases regularly in consequence of the growth of corals on the external side, the dry land follows it only. For the same reason he concludes that the external margin of a circular atoll-island is the highest, and inclines regularly towards the lagoon side, because the waves which filled out the inner side have to pass a longer way over the reef, and become consequently weaker. From this follows the supposition that the corals have not enlarged the reef in a corresponding, or at least in any considerable, proportion. A slope of the coral land is to be observed on several of the Nicobar Islands, and especially towards the *Pandanus*-swamp on Milu. At other localities successive sandy edges can be seen facing inwards. However, in general, and especially on the northern islands, the contrary takes place, and the new land rises gradually in terraces towards the base of the hills. That an upheavement of the ground has caused this, and in general facilitated the formation of new land, is certain; but on the other hand there are distinct proofs that the land has increased only through the accumulation caused by the breakers. The flat land on the south-eastern side of Milu rises only a few feet above the usual flood; and when in the month of May the S. W. monsoon drove the water into the harbour, the waves extended up to the outer cocoanut trees. On the

S. E. point, the sandbank had at that time reached a breadth of 20 to 30 feet and just began to be covered with vegetation. The wind had driven up the dry coral sand higher, and already a small kind of *Convolvulus* had begun to spread on the surface, and assisted the various kinds of grass in keeping the loose sand together; still such singular increase of land is certainly subject to changes; subsequent floods and currents might easily carry away the same bank, or place it somewhere else, and a general increase of the land would only be proved by a great many observations on the coast throughout the entire circuit of the islands, and during a long period. It is certainly so slow, that one generation is nothing, and probably the whole time during which these coasts were inhabited by the present race, is but very small as compared with it.

It appears that, for the formation of new land, a certain relation between the strength of the surf and the constitution of the sea bottom along the coast, is necessary. Where the latter is flat, the corals can build most quickly outwards, and where the breakers are at the same time weaker, they cannot supply *débris* in the proportion necessary for the formation of the upper conglomerate and the dry land. Thus reefs are formed which differ from those above described; but they occur much more rarely, and are only exceptionally found in comparison to those normal reefs. The channel between Trinkuttee and Carmorta varies in depth from five to ten fathoms. Especially on the western side of Trinkuttee the sea-bottom runs out very flat; it appears as if the corals had built not only in the usual way from the coast outwards, but had commenced on different spots of the sea-bottom within a certain distance from the coast. As at the same time the motion of the waves is not so strong on account of the neighbouring coast of Carmorta, the surface of these coral banks could not become covered with the usual quantity of conglomerate. The reefs extend from this coast to an unusual distance into the sea; they are covered with shallow water even during the ebb; and when one passes over them to the shore, one finds everywhere holes and channels varying from 4 to 5 feet in depth, their walls being covered with fine-branched corals. When one at last reaches the coast, one finds, in front of the dry alluvial land covered with cocoa-palms, a swampy area covered with mangroves, and regularly flooded over by salt water.

These conditions are again found developed in a still higher degree in the harbour of Nancowry. This is, as I have already mentioned, formed by the coast of the two Islands, Carmorta and Nancowry, and is, with the exception of two narrow openings, perfectly enclosed. In this way a basin is formed in which the motion of the sea waves quite disappears, and therefore no constant breakers are produced. The inner parts of its deep inlets are half filled up with detritus from the clay hills, and the mangrove jungle extends everywhere from the coasts far into the bay, but through the centre of the harbour, between the two openings, there daily pass periodical currents caused by the ebb and flow of the tide; fresh supplies of salt water are thus continually afforded, and a very great variety of corals occur, which, however, do not apparently form a true coral limestone, or reefs of the same kind as I attempted to describe above.

From the projecting points of the coast in the middle of the harbour the ground runs out flat, always under water, and over which every current must flow, causing small waves to be formed, except during perfect calms. These surfaces are everywhere covered with corals, but I nowhere found the compact conglomeratic limestone which characterises the outer reef; and it does not appear that the corals build in the above described manner regularly one above the other. They are scattered here and there on sandy ground among a large number of sponges and soft corals which are of no importance in the formation of reefs. Nearest to the coast on these reefs are especially found corals with very fine branches. Among others I remember to have obtained some similar to *Millepora alcicornis*; they were so brittle that I could not touch them anywhere without breaking off a few of the branches. On the same place I collected a large number of loose *Fungi*. Farther out, there occur numerous corals with a convex surface, and some of considerable size. I recollect having seen *Astræ*, *Mæandrinæ* and *Porites* similar to those on the outer reef exposed to the breakers; and I do not even know whether the latter contains species which do not occur at all in Nancowry harbour. Here also they rapidly disappear on the outer margin, and the reefs cease in 10 or 20 fathoms of water on a silty ground, which forms the rest of the bottom of the harbour.

With the exception of these conditions in Nancowry harbour and the channel near Trinkuttee the reefs as above described occur all along the coasts of the other islands which I visited. This constant character depends, as we have seen, upon habitat of the building-corals at the outer side exposed to the breakers. It seems that these sessile animals especially like places where their incapability of moving about in the water is compensated by the movement of the water about them. I also believe that this is connected with the manner in which food is supplied to them; but the essential object of this motion of the water is, that the corals are constantly washed out, and the deposition of any sediment prevented. For the rapidity with which these animals take water in and expel it again, so as to obtain the necessary particles for nourishment, cannot be so great that so enormous a free motion would be required for it as is produced in the great masses of water playing every moment above them. I would rather believe that these conditions of nourishment imply a certain chemical composition of the sea water for the life of the corals and the formation of the reef, and that for these reasons coral-reefs are excluded from certain large parts of the tropical sea. I had no time to analyse samples of sea water from different parts of the Bay of Bengal; several were taken by the expedition as desired by Professor Forchhammer, and his examination will certainly not give a less interesting elucidation of this inquiry than his known work regarding the composition of waters in various seas has given in other respects. For the non-occurrence of coral-reefs either round Pulo Penang, or at places on the Coromandel Coast which I visited, is certainly caused by some peculiarity of the sea water. It is mixed with fresh water and a fine detritus brought down by rivers, and therefore very different from the clear sea water in the neighbourhood of the Nicobars. Where these conditions exist, it does not appear to me probable that the corals are

able to extract so quickly from the water the lime and other necessary food, that therefore a constant supply is necessary at the rate at which it is obtained through the breakers. The masses of water which roll in a few minutes over the reef are so large that the portion of it which comes in contact with the coral animals and is changed by them is insignificant in proportion to the whole. Besides that, the water is constantly renewed in the neighbourhood of the islands on account of the current from east to west, caused by the ebb and the flow of tide, and every place in the channels between the islands or close to the coast is affected by this current. The form of the reef seems also to indicate that the principal action of the waves upon the growth of corals consist in their being constantly washed out. Only the steep side exposed to the breaker is covered with the building-corals advancing outwards against the surface, while on the upper surface as well as on the ground below are constantly accumulating the fragments. If one examines the ground in one of the channels between the islands outside of the reef, where the depth varies between 15 and 20 fathoms, within the range of the wave action, no reef-building corals are to be generally found, until the coast of the other island is reached, before which there is again a reef similar to the former. The soundings bring up sand and mud, or coral fragments of various sizes: this sediment, which must be constantly in the course of formation, being also moved about by the periodical currents and deposited at various places, must, no doubt, be especially in the way of the reef-building corals. The coral-reefs are, therefore, with few exceptions, coast formations, and moreover of the above described regular form which implies that they require, as starting point, a solid ground at a depth to which the motion of the waves is felt. I further look upon it as a settled fact that the coast in its entire extent round the island is surrounded by reefs,* except on the places where an interruption is caused by the fresh water; and another exception is where the coast has a precipitous fall to a depth beyond the prescribed limit. I had opportunity of seeing this near the small Island Tillangchong; soundings quite close to the shore indicated a depth of 40 to 50 fathoms. At that depth must constantly be deposited the fragments broken off by the breakers and other detritus from the island, so that no corals can build there. There are also no reefs to be seen until anchorage is found in a small bay, and here they appear abruptly; a strip of flat land with cocoa-palms is observed, and on the shore a conglomerate is found with a very large admixture of fragments from the plutonic rocks.

We see also that all the conditions required for the formation of coral-reefs are present in the sea round the islands, and that the growth immediately begins when the last mentioned condition, a solid base within a certain depth, is fulfilled; but only in this case. Upon this supposition, that the corals can only build on a solid ground which is

* I hardly need remark that where, on the map, a blue stripe along a coast is wanting, it does not mean to indicate that there is no reef in that place, for I only intended to indicate with this color that portion of the coral formation which has already been changed into dry forest-clad and, and permanently connected with the island.

within the reach of the waves, Darwin, as is known, bases his ingenious classification of coral-reefs, and upon this again his theory of extensive elevation and depression. If the reef, starting in the above-mentioned manner from the coast, reaches a point where the depth exceeds a certain limit, the progress of growth is interrupted, unless a depression or elevation of the ground takes place. In the first case the corals build upwards, thus producing a barrier reef separated by a channel from the original island, and after the total disappearance of the island a more or less circular atoll-reef. But if the island rises, the reef can progress in the regular manner as it began to grow. I shall not further enter into this theory, which always appears to be more ingenious and correct the more I think of it. That the Nicobar reefs belong to the class of fringing-reefs will be clear from what I have already said. Darwin in his general work on coral-reefs has colored them as such, and the description which I have here given of them is nothing new, but only an application of that celebrated naturalist's account of fringing-reefs to the given conditions. These fringing-reefs characterize also such coasts as are either stationary or subject to upheavals. That the latter is the case with the Nicobars, appeared already plausible from the fact of the volcanic activity in the range of islands to which they belong; I have further obtained the most decided proofs of this.

Nothing can certainly be more favorable for the examination of the most recent upheavement than a coast formation so well characterised as that of the reefs described above. Where, however, the elevation was only small, there still might have been doubts whether it could be proved with certainty. I have before attempted to show that the dead branched corals, which cover the upper surface of the reef, and which are not perfectly under water during the ebb, cannot be considered as a distinct proof of an elevation. It is also difficult to ascertain this from the height at which loose fragments are found within the reach of ordinary breakers. I would rather believe that the upper conglomerate, where it lies above the highest flood, suggests an upheavement of the ground; I found this everywhere, even on the southern islands. I often saw in the interior of the forest, where a stream had cut its bed, that conglomeratic stratum exposed. On Trice in beds 6 to 8 feet in thickness it covered the strand below the cliffs, and was altogether beyond the reach of the breakers. Wherever the limestone was thus exposed to the weathering action of the rain, instead of the salt water, it exhibited a remarkably rough and uneven surface. On the Island Terressa, I think, I saw a limestone bed formed of corals *in situ* exposed in the bed of a stream. Their size and position, with their rounded surface facing outwards and upwards, indicated this; it was at a distance of about 500 paces from the coast, and the bed of the stream had a strong fall towards it. On the same place I found the shell of a *Tridacna* of about three feet in diameter.

Most distinctly, however, was the elevation shown where the whole formation lay with its underlying strata above the level of the sea.

The west coast of Katchall had, at the place where I landed, a remarkable appearance. It was somewhere about 30 feet high, consisting throughout of coral limestone; flat, sharp-edged blocks of 6 to 10 feet in thickness were heaped up, so that they covered the whole coast, and one could walk without difficulty between them. Upon closer inspection it was shown that these blocks were derived from a fully 20-feet thick coral bed, resting on the sandstone and slate noticed on the southern group of islands. In consequence of the upheaval, the underlying beds were exposed to the breakers and gradually carried off, and the coral banks followed.

Still more interesting were the conditions on Bompoka, (*see plate Fig.* 6). In the flat coral tract on the west side of this island there is a patch of the older plutonic rocks, P, as an outlier of the central hills, and on this rests a coral limestone formation A, which covers the surface in all directions up to its edge, and is about 60 feet thick.

From the base of this ridge, which lies, so to say, like a wall below the central hills of the island, a new coral formation begins B, which as usual rises only a few feet above the level of the sea, and is in regular progress outwards. The bed A is conglomeratic above and below, containing there fragments of the serpentine-like gabbro; I suspect, therefore, that when the base P was 60 feet below the level of the sea, it extended from the then coast up to where it ceased to increase, on account of the abrupt fall. Only after a subsequent upheaval the outer prolongation of this base came so near to the sea level that a new coral formation *b* could take place. How deep the base of the latter lay I had no means of finding out. I believe, however, that the abrupt change of the older upheaved coral formation to a flat land, and the corresponding fall in the subjacent mass, can be better explained in this way than by supposing the upheaval itself to have been a very abrupt one, though this is also not excluded by that mode of explanation.

These are the few observations which I have been able to make regarding the purely geological character of the coral formation. Certainly it is worthy of a much better examination, and above all I think that zoological and physiological observations, which are quite wanting in my account, must form its true basis. I further have to explain that I have not visited the northern islands, on which the coral formation is said to be still more extensive. The upheavement to which the Nicobars have been subjected during the present epoch appears to have been least felt on the southern islands, and to have increased towards the north, so much so that on Chowry, as I have reason to suspect, it must amount to a couple of hundred feet. I do not, therefore, think it improbable that the islands have participated in disturbances of the earth, similar to those which have visited the Arracan coast within historical time, though the recollection thereof has disappeared among the inhabitants.

IV.—CLIMATIC RELATIONS. NATURE OF THE SURFACE AND VEGETATION.*

We do not possess sufficient data for the determination of the annual mean temperature of the Nicobars; but the observations up to date appear to confirm the general statement that the thermal equator passes through them on its way from the south of India to Malacca, and that they possess one of the highest mean temperatures. The climate is entirely an insular one, the variations of the temperature between day and night, and also between the different seasons, being very small. One notices these differences only so far as the wind, or the movements of the clouds, are able to reduce the heat. During a fresh breeze along the coast the heat is seldom oppressive; it is decidedly so in the interior of the forest in the still, damp atmosphere. But when in April and May, during the change of the monsoons, under a clear sky there is calm weather, it is hardly possible to escape the oppressive and relaxing heat; nothing can give protection or relief, and one does not feel equal to work, or to enjoy anything. I also believe that the electric tension of the air on such days increases the influence of the heat upon our organisation; for generally there is constant thunder heard in the distance, and occasionally heavy clouds collect round the hills, and relieve the air by a cool shower, and then one can breathe more freely.

The whole group of islands is situated within the area of the monsoons prevailing in the Bay of Bengal, and causing the two principal seasons. A dry and rainy season are thus distinguished; the latter is, as already noticed, predominant; but one passes very gradually into the other, and they are here not so well defined with reference to each other as at most places on the continent. Occasional showers are also seldom wanting for many days in the dry season, just as there are occasionally clear days during the rainy season. Considering the combination of this great humidity with great and equable heat, one cannot wonder that the vegetation is really so enormous, especially on those islands which in addition possess all the conditions of a fertile soil. From this comes the fresh green which permanently covers their shores, like those of Ceylon, and probably most of the other south Asiatic islands. The pleasant impression which this makes is increased on the Nicobars by the peculiar character of the most recent coral land which usually surrounds the bays. This is especially marked by the cocoa-palm forest, the outer margin of which is generally set off by a belt of bushes, and their intensely green foliage, blended with magnificent flowers, is made vividly prominent between the shining white coral beach below and the crown of cocoa-palms above. Immediately behind this flat land, the sight of which markedly recalls the description of the isolated coral islands of the Pacific Ocean, rise on

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* For the botanical names mentioned in this chapter I am indebted, beside the reports formerly alluded to, to the personal communications of the botanists, especially to the late Kamphövener.

☞ In any notice of the vegetation of the Nicobars, reference should be made to the very valuable paper by Mr. Kurz, of the Botanical Gardens, Calcutta, "Report on the Vegetation of the Andamans Islands," also to the chapter in *Hochstetter's* account on this subject, *vide* page 223.

the southern group the hills covered with forest, to which the slender *Nibong*-palms, rising above the highest of the *Ficus*-like trees, give a specially tropical aspect. The different constitution of the soil appears to be the reason why forests are partially wanting on the northern islands; but the grassy tracts with interspersed groves of palms and *Pandanus*, and occasionally interrupted with small patches of forest, are not less beautiful in the scenery of these islands.

I will add here an extract of the meteorological observations made by the officers on board of the *Galathea* during January and February. My occupations and excursions did not allow me to continue these observations regularly. Whatever I know from my own and other people's experience regarding the general climatic conditions of the whole group of islands, I shall place upon record here. The mean temperature probably best agrees with 28° cent. (Here, as well as in all succeeding pages, the references to the degrees of temperature are those of the centigrade scale). According to Rev. Mr. Rosen, who was 3½ years on Carmorta, the temperature is said to vary in the course of a year between 21° and 35°; but both these extremes occur but rarely. I have never during my stay seen the thermometer under 25° and never above 33° in perfect shade. The seasons themselves do not seem to influence this difference at all, but it is caused by the periodical winds and the dry or wet atmosphere which accompanies them. The months December to March, in which the N. E. monsoon and the dry climate prevail, are generally the driest and hottest; but the greatest heat is experienced on individual calm and clear days during the time of the change of the monsoon in April and May. For the rest of the year the heat is tempered by the cloudy sky and the showers which the S. W. monsoon brings. I have found that a shower setting in rapidly brought the thermometer down from 32° to 30°, and at another time from 30·5° to 27·5°. A glance at the accompanying tables will show how very small the variations are between day and night during the S. W. monsoon. The greatest difference is 4·3°, and in general it is 2·5°. During the change of the monsoon, when after a clear and calm day rainy showers set in, the difference may be as large as 6°. It is also to be observed that the mean daily temperature during this season, which may be considered as the hot season, differs from the annual mean, or 28°. In general we can, therefore, speak of a hot and cold season only as regards its influence upon the human organism, this being dependent on the protection against the sun's rays by clouds, &c., or on the facilities for evaporation by winds. When the sun approaches the southern tropic, the N. E. monsoon sets in in the Bay of Bengal; it is a dry, steady land wind. As early as the beginning of November the wind begins to be easterly; it is changeable up to the end of December, and steady from the north-east in January, February, and March. In April and May it changes again, and turns gradually to a south-west wind, at which point it remains stationary during the other months. The rain changes are according to these winds. On account of the small area of the Nicobars, the monsoons in passing across them are not in any particular way changed, as on Ceylon or Sumatra. Most likely the climatic conditions of the Nicobars will

most resemble those of the Andamans and the Tenasserim coast. It has been already said that the rainy season is predominant; however, from the adjoining tables it will be seen that not even the driest months are without rain. I must remark here that the word "overcast" is applied to a sky entirely covered with clouds; the word "cloudy" when heavy clouds are prevalent; the words "clear" and "mixed" are used in their usual signification; but when rain occurred, it is always specially noticed. The heaviest rains are in May, June, and July; and the S. W. wind is then also very strong, and frequently changes into a storm. Successive dry days occur only at intervals in August and during the change of the monsoons. The annual quantity of rainfall cannot be put lower than 100 inches.

Extract from the Meteorological Observations made by the Officers of the Galathea.

The observations are recorded at intervals of 4 hours, and begin daily at 12 o'clock at night.

Date.		Place.	Barometer.	Thermometer.		Sky.
				Dry.	Wet.	
January 1846.						
	12		...	27·4	26·3	
	4		27·10½	27·5	26·5	Overcast.
	8		27·11½	28·0	27·0	
5th	12		27·11½	27·9	26·0	Cloudy.
	4		27·10½	27·5	25·0	Clear.
	8	Bay of Bengal.	27·11	27·3	24·8	
	12		27·11½	27·5	25·5	
	4		27·10½	27·2	25·1	Clear.
	8		28· ½	28·0	26·6	
6th	12		27·11	29·2	26·8	Mixed.
	4		27·10½	29·6	26·3	Clear.
	8		28·00	27·7	25·8	
	12		27·11	27·11	25·6	
	4		27·11½	27·0	25·0	Mixed.
7th	8		28·00	28·5	25·4	Clear.
	12		27·11	28·4	25·9	
	4		27·11	28·7	26·1	Cloudy.
	8		28·00	27·7	25·2	
	12		28· ¼	27·3	25·2	
	4		27·11½	27·2	25·0	
	8		28· ¼	28·3	25·0	
8th	12		27·11	30·0	26·0	
	4		27·10½	28·5	25·1	Mostly clear.
	8		28· ¼	27·2	24·8	
	12		27·11½	27·0	24·6	
	4		27·11½	26·6	24·0	Mixed.
9th	8		27·11½	28·5	25·3	Clear.
	12		27·10	28·8	26·3	Overcast.
	4		27·10½	28·6	26·4	Thunder.
	8	At Car-Nicobar.	27·11	27·4	26·2	Heavy rain.
	12		27·11½	26·8	26·1	
	4		27·11	26·8	25·4	Mostly thunder and
10th	8		28· ½	28·8	26·7	rain.
	12		27·10¾	28·6	26·5	
	4		27·10½	27·4	25·2	
	8		27·11½	26·2	26·0	
	12		27·11½	25·5	21·0	
	4		27·11	26·6	25·4	Mixed.
11th	8		27·11½	28·4	27·3	
	12		27·11½	29·8	27·5	Clear.
	4		27·10½	28·6	26·4	Rain.
	8		27·11½	27·8	26·2	

Date.		Place.	Barometer.	Thermometer.		Sky.
				Dry.	Wet.	
January 1846.						
	12	At Car-Nicobar.	27·11½	26·8	26·1	
	4		27·11¼	26·8	25·4	Mixed.
12th	8		28· ¼	28·8	26·7	Clear.
	12		27·11½	28·6	26·5	Mixed, with a little rain.
	4		27·11½	27·4	25·2	
	8		28· ¼	26·2	26·0	
	12	Under sail between the Islands.	27·11¼	27·7	26·8	
	4		27·11	27·3	25·3	Mixed.
	8		27·11½	27·6	26·4	
13th	12		27·11	.....	.....	Clear.
	4		27·10½	28·6	26·4	
	8		27·10¾	28·0	26·8	Mixed.
	12		27·11¾	27·8	27·7	
	4		27·10½	27·5	26·3	
	8		27·11½	29·7	27·2	Mostly.
14th	12		27·11	29·6	27·2	
	4		27·10¼	29·9	27·6	Clear.
	8		28· ¼	28·2	27·1	
	12	At Chowry.	27·11	27·9	26·4	
	4		27·11½	27·6	26·8	Mixed.
	8		27·11½	28·4	26·8	Lightning.
15th	12		27·11¾	31·0	28·2	
	4		27·10	29·3	28·2	Clear.
	8		27·10¾	28·4	26·5	
	12	Under sail between the Islands.	.....	.....	.....	
	4		.....	.....	.....	
16th	8		27·11¾	.....	.....	Clear.
	12		27·11½	29·9	27·0	Mixed.
	4		27·10½	28·8	26·3	But little rain.
	8		27·10¾	28·4	26·0	
	12	At anchor in the Port of Nancowry.	.....	27·4	26·4	
	4		.....	27·4	25·8	
17th	8		27·10¾	28·2	27·4	Mostly cloudy.
	12		27·11	29·7	28·2	
	4		27·10	28·8	27·7	
	8		27·10½	28·3	26·5	
	12		27·10½	27·9	27·1	
	4		27·10¼	27·5	26·6	
18th	8		27·11¾	30·0	27·7	
	12		27·11	31·4	29·0	Mostly clear.
	4		27·10½	28·9	28·1	
	8		27·11	28·0	27·1	
	12		27·11	27·3	26·3	
	4		27·11	27·5	26·0	
	8		27·11¼	29·2	27·9	
19th	12		27·10¾	29·8	28·2	Mostly clear.
	4		27·10½	29·3	29·0	
	8		27·11½	28·8	27·6	

Date.		Place.	Barómeter.	Thermometer.		Sky.
				Dry.	Wet.	
January 1846.						
	12	At anchor in the Port of Nancowry.	27·11½	28·2	27·8	
	4		27·11	27·3	26·4	
20th	8		27·11½	30·2	29·8	Clear.
	12		27·10½	29·6	28·5	Cloudy, with little rain.
	4		27·10½	29·0	29·4	
	8		27·11¼	28·1	27·0	
	12		27·11½	27·8	27·0	
	4		28·00	27·3	26·8	
21st	8		27·11¼	29·2	27·5	
	12		27·11¼	30·3	28·2	Cloudy.
	4		27·11½	28·8	27·4	
	8		27·11	27·8	27·2	
	12		27·11	27·4	26·8	
	4		27·10½	27·4	26·4	
22nd	8		28·00	28·0	26·4	
	12		27·11	28·2	26·6	Cloudy.
	4		27·10½	28·4	26·8	
	8		27·11½	28·0	26·2	
	12		27·11½	27·8	26·2	
	4		27·11¾	27·4	26·0	
23rd	8		27·11½	29·0	27·8	
	12		27·11¼	29·4	27·6	Cloudy.
	4		27·11½	28·5	27·1	
	8		28·00	28·2	26·8	
	12		27·11	27·4	27·0	
	4		27·11	27·5	26·8	
24th	8		27·10¼	28·2	27·5	Cloudy, with little rain.
	12		27·11	29·0	28·0	
	4		27·11	28·0	27·4	
	8		27·11¼	27·5	26·8	
	12		27·11¼	27·5	26·9	
	4		...	27·8	26·8	
25th	8		27·11¼	30·0	27·8	
	12		27·11½	28·9	27·8	Mostly clear.
	4		27·11½	28·3	27·0	
	8		28·00	27·5	26·8	
	12		28·60	27·4	26·8	
	4		28·00	27·3	26·5	
26th	8		27·11¾	28·8	28·5	
	12		27·10¾	29·0	28·6	Mostly clear.
	4		27·10½	29·2	28·0	
	8		27·11¾	28·2	27·5	
	12	Under sail between Islands.	28·00	28·2	27·3	
	4		27·11¼	27·5	27·0	
27th	8		28· ⅝	29·2	29·0	Mostly clear.
	12		27·11¾	29·0	28·4	
	4		27·11¼	29·2	28·6	
	8		28·00	.....	.....	

Date.		Place.	Barometer.	Thermometer.		Sky.
				Dry.	Wet.	
January 1846.						
	12	Under sail between Islands.	27·11¼	27·8	27·2	
	4		27·11½	27·8	27·7	Clear.
28th	8		27·11¾	28·5	27·4	
	12		.....	29·0	27·4	A little rain.
	4		27·11	28·9	27·6	Clear.
	8		27·11¼	28·0	27·0	
	12	At Terressa.	27·11½	27·3	27·0	
	4		.....	27·4	27·0	
	8		.....	.....	.....	
29th	12		27·11¼	29·2	28·4	Mostly clear.
	4		27·11¼	29·0	27·4	
	8		28·00	28·2	26·5	
	12	Under sail between the Islands.	27·10½	28·0	27·1	
	4		28·00	27·5	27·0	
30th	8		27·11½	28·4	27·6	
	12		27·10¾	29·8	28·2	Mixed.
	4		27·10½	28·6	27·9	
	8		27·10¼	28·0	27·0	
	12	At Carmorta.	27·10¾	27.4	27·0	
	4		27·10¼	27·2	26·8	
31st	8		27·11½	28·6	27·4	
	12		27·10	28·8	28·0	Cloudy.
	4		27·10	29·6	28·4	
	8		27·11	27·4	27·0	
February 1846.						
	12	Under sail between the Islands.	27·10	27·8	27·1	
	4		.....	.....	.....	
	8		27·10¼	28·7	28·0	
1st	12		27·11¼	30·4	29·0	Cloudy.
	4		27·10	29·8	29·0	
	8		27·11	28·0	27·5	
	12	At anchor near Little Nicobar.	27·11½	.....	.....	
	4		.....	27·1	26·8	Cloudy.
2nd	8		27·11½	28·4	28·0	
	12		27·10	30·2	29·0	Clear.
	4		27·10	29·4	27·4	
	8		.....	.....	.....	
	12		.....	27·4	26·4	
	4		27·11½	27·5	26·5	
3rd	8		.....	28·6	27·4	
	12		27·11¼	30·4	29·4	Mixed.
	4		27·11½	29·2	28·4	
	8		.....	27·4	26·9	
	12		27·11½	27·3	26·9	
	4		.....	27·2	26·8	
	8		.....	.....	.....	
4th	12		27·10½	29·8	28·8	Cloudy.
	4		27·10¾	29·4	28·4	
	8		27·11	28·7	27·8	

Date.		Place.	Barometer.	Thermometer.		Sky.
				Dry.	Wet.	
February 1846.						
	12	At anchor, Little Nicobar.	27·10¼	27·6	27·0	
	4		.....	27·4	26·8	
5th	8		27·11	28·2	27·4	Mixed.
	12		27·10½	30·5	28·8	
	4		27·11	28·3	27·8	
	8		27·11	27·3	27·0	
	12		27·11¼	27·0	27·0	
	4		27·11	27·2	26·4	
6th	8		27·11	28·4	28·0	
	12		27·10	30·1	29·4	Mixed.
	4		27·10	29·4	29·0	
	8		27·11	28·2	27·2	
	12		27·10¾	27·7	27·0	
	4		.....	28·3	27·6	
7th	8		27·11	30·0	29·1	Mixed.
	12		27·10½	30·2	28·8	
	4		27·11	29·4	28·4	
	8		27·11½	27·5	27·0	
	12		27·11¾	27·0	26·8	
	4		27·11¾	27·0	26·5	Clear.
8th	8		28·00	29·0	28·2	
	12		27·11	30·1	29·5	Cloudy.
	4		27·10	30·0	29·4	
	8		27·11	28·2	27·6	
	12		27·11½	29·5	29·0	
	4		.....	.....	.....	
9th	8		27 10½	30·0	27·5	
	12		27·09½	29·6	27·3	Mixed.
	4		27·10	28·0	27·6	
	8		27·11	27·4	26·8	
	12		27·11	26·8	26·6	
	4		27·11	26·7	26·0	
10th	8		27·10½	28·6	26·0	
	12		27·09½	30·8	27·9	Cloudy.
	4		27·09½	29·9	27·0	
	8		27·10¾	28·6	26·4	
	12		27·10½	27·2	25·0	
	4		27·11	27·6	24·8	
11th	8		27·10½	30·2	26·8	
	12		27·11	30·3	26·2	Mixed.
	4		27·10	29·0	26·0	
	8		27·11	27·2	26·0	
	12		27·11½	26·6	25·8	
	4		.....	26·4	25·4	
12th	8		27·10	29·0	27·2	
	12		27·10	30·8	26·0	Cloudy.
	4		27·09¾	30·0	26·4	
	8		27·10½	28·2	25·8	

Date.		Place.	Barometer.	Thermometer. Dry.	Thermometer. Wet.	Sky.
February 1846.						
	12	At anchor, Little Nicobar.	27·11	27·8	25·0	
	4		.....	27·0	25·8	
13th	8		27·09¾	28·8	26·0	
	12		27·09¾	30·2	29·0	Mixed.
	4		27·10	29·0	26·4	
	8		27·11	28·2	26·0	
	12	Under sail between the Islands.	27·11	26·8	25·4	
	4		.....	26·6	25·2	
14th	8		27·10	29·0	27·2	Thunder with rain.
	12		27·09¾	29·5	26·5	
	4		27·10½	28·4	26·3	
	8		27·11	28·0	25·3	
	12	On the N. and W. side of Great Nicobar.	27·11	27·5	25·0	
	4		27·11	.....	.....	Mixed.
15th	8		27·10½	28·7	26·3	Overcast.
	12		27·11	30·2	26·9	
	4		27·11	29·6	26·9	Mixed.
	8		27·10½	28·0	27·4	
	12		27·10	28·4	26·2	
	4		27·11	27·4	26·2	
16th	8		.....	29·5	27·0	Mixed.
	12		27·11¼	30·0	28·3	
	4		.....	29·5	26·6	Cloudy.
	8		27·11¾	28·4	26·0	
	12		27·11	27·3	26·0	
	4		27·10½	28·2	26·1	Thunder and rain.
17th	8		27·11	28·0	26·5	
	12		27·11¾	29·0	26·2	
	4		27·11	28·6	26·4	Clear.
	8		27·11¾	28·0	27·2	
	12	At anchor on the S. side of Great Nicobar.	.....	28·0	25·9	
	4		27·11½	28·4	26·0	
18th	8		27·11½	29·1	26·5	Cloudy.
	12		27·11	30·6	26·8	
	4		27·11	29·8	26·7	Mixed.
	8		27·11	28·2	26·3	
	12		27·10¼	26·8	25·6	
	4		27·11	26·4	25·3	
19th	8		28· ½	29·8	26·4	Cloudy.
	12		27·11½	30·2	26·9	Lightning.
	4		27·11½	29·6	26·2	
	8		28·00	28·2	25·4	
	12		27·10¾	27·6	25·8	
	4		27·11	27·4	25·4	
20th	8		27·11¼	28·8	26·5	Mixed.
	12		27·11½	30·8	28·2	Thunder and rain.
	4		.....	28·9	26·4	
	8		28·00	25·8	25·2	

Date.		Place.	Barometer.	Thermometer.		Sky.
				Dry.	Wet.	
February 1846.						
	12	At anchor on the S. side of Great Nicobar.	27·11	26·7	62·0	
	4		27·10½	26·4	25·4	
21st	8		28· ½	29·2	28·0	Mixed.
	12		28·00	30·1	27·9	
	4		.....	29·4	27·8	
	8		27·11½	28·2	26·9	
	12		27·11	27·4	25·8	
	4		27·11¼	28·0	25·8	
22nd	8		27·11½	29·2	26·4	
	12		27·11¾	30·4	26·4	Mixed.
	4		.....	29·2	26·2	
	8		27·11	29·2	26·4	
	12		27·11	27·8	25·4	
	4		27·11¼	27·6	25·8	
23rd	8		27·11½	28·4	26·2	
	12		27·11¾	30·0	27·0	Mixed.
	4		27·10¾	29·3	26·8	
	8		27·11	28·5	26·1	
	12		27·11¼	27·9	26·0	
	4		27·11½	.....	.....	
24th	8		27·11¼	29·0	27·0	
	12		27·11¼	30·2	27·2	Mixed.
	4		27·11¾	29·4	26·2	
	8		28·00	28·4	27·2	
	12		27·11¾	.....	.....	
	4		27·11½	27·8	26·0	
	8		28·00	29·4	27·2	
25th	12		.....	30·2	28·4	Mixed.
	4		28·00	30·0	28·2	
	8		27·11½	28·6	26·2	

Various observations on the weather at the change of the monsoon during my last stay at the Islands.

APRIL.

3-11. Regular, but weak N. E. monsoon with clear weather and oppressive heat throughout; on the 3rd, about 11 A. M., the thermometer was reduced by a sudden shower of rain from 32° to 30°.

10. South-west wind and a thick rainy atmosphere.

11. Calm; oppressive heat.

12. Forenoon—calm and clear weather; afternoon—violent thunder and rain.

13-18. Mostly calm weather and regular though weak N. E. monsoon, passing generally towards mid-day into a calm. The thermometer stood at from 29° to 31°.

19. Calm, and heat most oppressive. In the afternoon a thunder shower. The sea showed a swell from the S. W.

20-21. Hot weather with an easterly breeze.

22. A calm, and frightful heat in Nancowry harbour.

23. Scarcely a breath of air.

24-26. North-easterly but slight wind, sky overcast; the thermometer standing at 30° by day.

27. South wind, alternating with calms. Thunder in the distance could be heard the whole day long.

28. Alternating calms and east wind; thunder; thermometer standing at 30° by day.

30. Morning—calm; thermometer 30½°, reduced at noon to 27½° by a violent storm of rain.

MAY.

1-4. In the morning a regular N. E. wind; then towards noon calm; and oppressively hot (32°-33°) with continued thunder. In the evening wind S. W., and rain in the night.

5. In the forenoon, on the way to Nancowry, the most oppressive heat that I ever suffered on the islands. Thunderstorm at noon.

6-10. In Nancowry harbour a variable but generally S. W. wind. The sky mostly overcast. Scarcely an hour without showers of rain which, especially at night time, became very heavy. Violent thunder storm.

11-15. Alternating rain and bright sunshine.

16. Cloudy weather with but little rain.

17-19. Alternating clear weather and fearful storms of rain.

20-24. South-west wind and frequently stormy; rain unceasing day and night.

Considering that these climatic conditions are to a certain extent the same on all the islands, while the geological constitution is very variable, it is to be suspected that the differences in the vegetation of the islands are principally connected with the latter. A study of the geographical distribution of plants on these islands would certainly give interesting results regarding the influence of the soil upon vegetation. I have already noticed the characteristic difference, that some of the islands are covered with a dense forest, and others with grass

only. The five different formations, the distribution of which I have attempted to show on the map, so far as it was possible, produce four kinds of soil quite distinct one from the other.

The most recent marine alluvium consists, as we have seen, almost solely of fragments of corals and shells, and therefore of carbonate of lime. The coral limestone besides this contains also some oxide of iron, phosphate of lime (as I ascertained by analysis), and probably also silica and magnesia. The small quantity of fragments of older rocks in the upper beds of these islands constitutes the only difference between this soil and that obtained from purely coral islands. It is also the same for every one of the islands, and extends in a narrow strip along the coast, between the sea and the hills; in some places it has already connected two islands into one, as to all appearance on Tillangchong and Little Nicobar, with the latter of which the Island Milu will most likely be some day connected in a similar manner. On the northern islands this most recent land appears to have the greatest extension; the area is indeed small as compared with that of the high land, but it is important, being apparently the only inhabited part of the island and supplying food to the present population, with the exception of the little known tribe in the interior of Great Nicobar. I have mentioned the characteristic swamps which are connected with the formation of the alluvial ground, I mean the salt water or mangrove-swamps on such places of the coast, where the regular accumulation of coral fragments cannot take place, and the *Pandanus*-swamps originated from the former after their communication with the sea has been cut off. With these exceptions the flat land is principally occupied by the cocoa and the other plantations of the natives.

Those islands are certainly the most fertile which are formed by the brown coal formation described above. The sandstone and slate composing it are with their calcareous constituents easily decomposed, and the surface of the mountains are for the most part covered with soil several feet thick, consisting of a mixture of micaceous sand and clay, and more or less altered fragments of calcareous rocks. At the base of the hills and in the valleys this stratum is naturally thickest, and forms here, so to say, a passage to the alluvium formed by the detritus of those hills.

Great and Little Nicobar, Katchall, and all other smaller islands belonging to this group are covered everywhere with forest, with the exception of a few precipices. The species of *Ficus* may be considered as predominant among the lofty foliage-trees. On Little Nicobar, where the natives have made a path through the forest to facilitate communication with the opposite coast of the island, I saw some of these trees of an enormous size; I do not know whether they were the same as the *Ficus Indica*, but they showed like the banian tree, long-stretching branches sending roots to the ground and thus causing new stems to be formed. The isolated banian trees in India are not so much distinguished for their height, as for the horizontal extent of their branches; being always supported by newly formed stems.

But in the interior of this forest the close confinement by the surrounding trees caused these to grow to an unusually great height, to obtain sufficient light for the development of their leaves. I was several times surprised to find that slender trees, each as large as a good-sized beech, when I followed the stem upwards, proved to belong to a foliage crown common to several others, and, therefore, being only a part of one individual tree. Similarly characteristic of the luxuriant growth is the peculiar development of the roots, which these and many other trees possess; they sometimes form flattened segments above the ground, projecting like buttresses from all sides of the stem, and leaving stalls between, in which several people could find room. Besides, there are many other smaller trees of the same kind, among which some are distinguished by large yellow fruit, similar in shape to the Sycamore figs.

Besides the different kinds of *Ficus* the *Dipterocarpæ* are among the largest trees. Of *Terminalia* there are several species, among these *T. catappa*. I may also mention the genera *Bauhinia, Clarodendron, Boehmeria, Celtes, Baringtonia speciosa,* and *Hernandia ovigera.* Where the hills reach to the coast and no alluvium intervenes, groups of *Casuarinæ* are often seen in the neighbourhood of precipices. The higher palms of the genus *Areca* are, however, not so common here as on the northern islands. The foliage-trees are everywhere the most prevalent; their thick foliage actually keeps the hilly ground in permanent shade, under which only such plants grow as do not require direct light for their development. Several *Cryptogamic* plants appear to be especially suited to this half dark and damp atmosphere. One meets there that surprising object—the tree ferns, with their fine, regular crown of foliage, also small ornamental *Lycopodia* (among which are *L. elegans, phlegmaria*). Most commonly, however, the ferns are seen as epiphytes on the gigantic stems of trees; a *Polypodium* (*P. nidus*) with broad leaves is especially common on old half-rotten stems; orchids (*Dendrobium*) appear to be rare on these islands. It is also not uncommon to find in these shady spots various other plants sometimes forming regular networks round the stems, and in other places hanging down in great masses. The most common creepers of this kind are those belonging to the *Asclepiadæ* and *Bignoniæ.* Besides these there are climbing *Cissus, Cissampelos, Ficus, Menispermum, Tournefortia, Cassyta.* Some kinds of *Calamus** or *Rotangs* also flourish in the forest of the southern islands, making it impossible to penetrate through the underwood on account of their hooked thorns.

The primeval forest of the southern Nicobars is certainly distinguished, not only by the great height of the trees, but also by its density, from most of the other forests of the kind in these latitudes. I have heard of travels in the Malayan forest executed on foot, and even on Pulo Penang, where there is a good road through the forest up to the top of the mountain ridge, it was generally no particular difficulty to go into the forest by the road side. On Little and Great Nicobar this was literally impossible. The places which I visited were, therefore, mostly

* One of them was considered by Kamphövener as new, and was named by him *C. regis-Daniæ.*

those where either no large trees existed or where they had been cleared away; and here the vegetation generally had, on account of sufficient light being admitted, assumed a different character. I have already noticed the banks of rivers on Great Nicobar, where low trees and bushes occupy the outer edge of the forest. If one proceeds up the little stream on Little Nicobar, as far as it is possible to go by boats, and then follows a path, one reaches a rather extensive free space, from which the natives probably obtained the timber for their canoes. Here grow numerous soft and juicy, and rather large, grasses belonging to the genera *Panicum, Eleusine, Acrosticum*, with different ferns, *Labiatæ* and *Leguminosæ*, and several species of *Justicia*. The tree ferns are also here more common; but the chief ornaments of these places, surrounded with high forest, are the small trees and bushes with thin fresh, green, and sometimes magnificent flowers. To these especially belong the *Melastomæ*, of which here, as generally in the Malayan country, there are a great number of species; further the *Mimosæ*, and plants belonging to the genera *Jasminum, Inga, Ixora, Vitex, Cassia*. A climbing *Convolvulus* often covers the bushes at the outer edge of the forest, and relieves the eye from the dark interior filled with rotten stems and the network of *epiphytes* and *rotangs*.

The above-mentioned alluvial land through which the rivers flow in the southern part of Great Nicobar and the corresponding one on Little Nicobar, also belong to this class. We have seen that each of them consists of three distinct parts, each indicating a stage in the formation of this new land; as *first*, the outer edge regularly flooded by salt water and characterized by the mangroves; *secondly*, the part often flooded by the river where the *Nipa fructicans* is particularly common; and *lastly*, the inner higher portion. The further one proceeds up the river the denser he finds the forest vegetation; but in general the trees are not so high as on the mountains, the underwood is not so thick, and there are many kinds of juicy grass to be found. One observes especially many magnificent groups of *Pandanus*, also some cocoa-palms, which are used by the natives of the coast, and probably even planted by them.

If we now turn to the northern islands we find a perfectly different soil. As the plutonic rocks are much less subject to decomposition than the calcareous sandstones and slates, the layer of soil must consequently be much thinner. Its chemical qualities depend of course upon those of the rock from which it is derived, and vary with the same. In general, however, we can suppose that the percentage of alkalies, obtained from the decomposition of the felspathic constituents, is favorable to vegetation. On the other hand, the magnesian clay *(see p. 129)* belonging to the older alluvium appears to be deprived of the principal conditions of fertility. On the Islands of Nancowry, Carmorta and Trincuttee these varieties of soil are found together, because some of their hills are formed of the plutonic rocks, and others of the older alluvium. Among the last, there are some in which the conglomerate prevails, while most of them are of that sterile clay. There can be no doubt that this variation of the soil is the cause of the changes of forest and of grassy plains, which make the view round Nancowry harbour so pleasant. I have found that generally the clay-hills are covered only with grass, while the forest

partly occupies the hills of plutonic rocks, partly the valleys between them, in which masses of varied soil accumulate, and a greater humidity exists. This forest also is generally not so dense as that on the southern islands; while on the other hand it probably contains a larger variety of forms. Among the large trees there are to be found many *Ficus*, besides several kinds of *Euphorbiaceæ*, *Acanthaceæ*, *Apocyneæ*, *Laurineæ*, *Leguminosæ*, and at the edge of precipices again the *Casuarineæ*. Further the genera *Croton*, *Celtes*, *Terminalia*, *Sapindus*, *Clerodendron*, *Canarium* and *Cerbera*. The grass vegetation occupying the greatest part of these islands is very luxuriant in the valleys, and at the base of hills, but it becomes gradually thinner and lower towards the top. In the damp places many soft grasses may occur; but on crests of hills, where the dry magnesian clay appears at the surface from below the soil, and is partly covered with a coarse ferruginous sand, while all the finer particles of clay are washed down into the valleys by the showers, there are generally only dry silicious *Gramineæ* and *Cyperaceæ* to be met with. The numerous species mostly belong to *Panicum*, *Agrostis*, *Eleusine*, *Chloris*, *Paspalum*, *Mariscus*, *Gynerium*, *Andropogon*, *Fimbristylis*, *Kyllingia*; on the crest especially occur *Saccharineæ* (the famous *Lallang* of the Malays) and the *Cyperaceæ* of the *Scleria* group.

The low trees and bushes which characterize the few open spots on the southern islands, appear more generally and of greater variety in similar localities of the northern islands. When I with difficulty got through the forest, and reached an open grassy space, I found myself occasionally, as if I had been in a garden, surrounded with a selection of flowers of the *Melastomata*, *Jasmin*, *Mimosæ*, *Cassiæ*, *Ixoræ*, *Ardesiæ*, *Malvaceæ* and *Solaneæ*. *Pandaneæ* and palms, which are the characteristic ornaments of the forest, are also never wanting. *Pandanus*, strictly speaking, is found everywhere in the forest and in open places; on swampy ground they grow thick and succulent, as I have noticed when speaking of the swamp in the interior of Milu; but those which are found scattered singly on the dry ridges of the grassy hills appear to belong to another species; they are of about the same height as the former, but much more slender throughout; often provided with large fruit of a beautiful bright red color. In the shady parts of the forest are to be found the stemless palms, belonging to *Zalacca* and the ornamental *Areca catechu*; the pigmy palms which occur in the hill forests of Pulo Penang I do not remember to have seen on these islands. The largest *Areca*-palms (specially the *A. Nibong*) is found everywhere exactly as the *Pandanus*. Their stems of 80 feet height rise above the other forest trees, forming isolated groups near the top of the hills; and one can truly say that the picturesque scenery which they produce will remain permanently in the recollection of every visitor to those islands.

I also visited the northern group of Islands, Terressa, Bompoka and Tillangchong. Terressa appears in a geological point of view to be composed of the most various kinds of materials. Its hills are not very high, and are partly covered with grass, partly with wood. Bompoka is tolerably high in proportion to its size. The central mountain ridge

descends at first very steeply, but slopes more gradually below. Therefore it is that only the lower part appears to be covered with wood, while the upper steep peak seems overgrown with grass. I have given a small sketch of this island on account of this characteristic form. I did not visit the crater-like valley which is situated upon the summit, and probably no one else has; but it is seen pretty clearly, when the island is observed from the south, that it is circularly enclosed and has no direct outlet. The moisture of the ground may well be the cause of the luxuriant wood vegetation which prevails all round the edges. The island, notwithstanding its small size, is distinguished from the others by the unusual quantity of fresh water which remains in the small streams even during the dry season. I cannot say whether it may be presumed that the valley forms a reservoir and supplies these by means of cracks. I have not met on the island with any more recent plutonic or volcanic rocks, but chiefly compact serpentinous gabbro. Tillang-chong is, relatively to its size, the highest and most craggy of these islands. The surface is flattest above, and slopes down the sides precipitously until it forms an almost perpendicular cliff; on this account the forest vegetation which is thickest at top decreases with the slope, until on cliffs actually precipitous the growth of vegetation becomes impossible. At the external edge of the forest I observed among the fallen and half-rotten trees especially many *Casuarinæ*.

Finally, I append the following general remarks regarding the fauna* of the islands from the reports prepared by the Zoologists of the expedition, Professors Behn, Reinhardt, and Kjellerup.

The isolated situation of the group of islands, and the small area they possess, led us to suspect a paucity of mammalia. A small long-tailed monkey inhabits the forest of the southern islands; I have seen it wild myself on the trees, and also young ones caught by the natives. They often do much damage to the more distant cocoa plantations, by biting off the young nuts to obtain the water from them. Where there are no huts near, the palms generally are without nuts. A large kind of buffaloe is found on Carmorta, but strangely there only. Neither Pastor Rosen, during his stay on the islands, nor Professor Behn, who made a special tour in the interior of the island, were successful in seeing the animal; but it is certain that the natives kill several of them every year. Of the horns which they preserve one weighed 7 to 8 pounds; their foot marks were six inches broad and long, and the distance from one to the other 5 feet. Their existence appears greatly to depend on the accumulation of fresh water in the northern part of the island during the dry season, and their increase to be limited by this. According to Rosen's opinion, they have not been introduced by European colonists; but on the other hand it would seem strange that, if aboriginal, they do not occur on Great Nicobar, where the quantity of fresh water, especially

* For an account of the Fauna see Mr. E. Blyth's paper in the *Journal Asiat. Soc. Bengal*, vol. xv, 1846, p. 367, and also the results of the Austrian expedition "Reise de Österreichischen Fregatte "Novara," *Wissenschaftlicher Theil,*" published by a Committee of the Vienna Academy of Science.

to face page 166.

View of the Island Bambuka.
(from Rink's Nicobar Islands.)

in the southern river, is much larger. The pigs running about in the forest appear to have been originally kept by the inhabitants, and to have afterwards become wild. Mice and rats seem to be common. On Car-Nicobar an animal of the *Murinæ* is found, which injures the cocoa-palms, and is, therefore, persecuted by the natives. The caves on the southern islands swarm with bats, and the large kinds of *Pteropus*, which chiefly live on the fruits of *Pandanus*, I have observed hanging on the trees on Nancowry; many were shot by Pastor Rosen. Birds are more numerous on the island than mammals. There are a great many pigeons, the call of which is heard everywhere in the interior of the forests; some are of particular beauty *(Caloenas Nicobaricus)*. Small green parrots and *mainâs* (*Gracula religiosa*) are caught by the natives when young and brought for sale to the ships. Along the coast are often seen large fishing eagles, and on the dry coral reefs various species of the genera *Totanus*, *Numenius* and *Charadrius*, which generally frequent the coast. Of gallinaceous birds there is one kind to be found which is a little larger and has longer legs than the common guinea fowl, brown, with darker spots, and without feathers on the head and the upper part of the neck.

The damp thick forests are inhabited by numerous lizards and snakes; one meets with them at every step; on the trees occur various species of *Calotes* and *Chameleon*. On the southern islands and Katchall are found Crocodiles (*Croc. bi-porcatus*), though not very common. I suspect that their chief resort is along the rivers in the flat land and in the mangrove-swamps. During our stay in the haven of Little Nicobar the natives killed a very large specimen, for they eat the flesh. I have myself never seen them on the islands. According to Rosen a large *Python* about 12 feet long is said to be common. They were especially dangerous to his poultry, and one morning he found one which had nearly swallowed up a large cock close to the house. During the day they may be seen in the high *lallang* grass on the hills. Snakes of smaller size are to be met with on every excursion into the forest, but only two species are said to be poisonous (*? Trigonocephalus*). I have only once seen a native with a swollen leg resulting from the bite of a snake; and cases of death from it are said to be very rare.

The dry season, during our expedition, was less favorable for the observation of the *Articulata*. It also seems to result from the small extent of the islands, and their isolated situation, that a remarkably small number of species were found. However, a large number of these animals are not wanting, destined to live on organic bodies in the course of de-composition. Animal substances are consumed by the larvæ of flies with an incredible rapidity. *Termites* and ants are in endless numbers, and this cannot astonish any one who observes the quantity of vegetable matter, the forest being actually filled with a large number of fallen trees. Spiders play an important part in the destruction of insects; a good many species have been found; and among these are distinguished *Epeira* and *Thomisus* on account of their number, size, magnificent colors and fantastic forms. A small scorpion is very common in rotten trees; but centipedes are less common. Mosquitos generally are not troublesome, and appear to keep to certain localities, especially, as I believe, to the mangrove-swamps

Pastor Rosen mentioned that he was extremely troubled by them on Trinkuttee; I found this verified in a remarkable manner when once in the evening waiting on shore for a boat near the mangrove-swamps.

Richest in various form of animal life is certainly the sea in the immediate neighbourhood of the islands. The coral-reefs, lying the greater part of the day half-dry, are a good collecting ground for various *Crustacea, Molluscs* and *Polyps*, which remain behind in the shallow pools when the sea retreats. They especially gave Mr. Reinhardt an opportunity for collecting a large number of the lower organised animals, although his stay was a short one.

V.—POPULATION AND PRESENT STATE OF CIVILIZATION.

It has been already mentioned in the previous chapters that, with the exception of the wild tribe living in the interior of Great Nicobar, only the small border of the latest coral land, which more or less surrounds every island, is inhabited, and that the islands, therefore, in relation to their present condition of cultivation, only appear as coral islands. The *Pandanus* which thrives everywhere on the islands, but especially in swampy places of the coral land, and the cocoa-palms, which are only to be found on the extreme edge of the latter along the coast, supply the inhabitants with the essential necessaries of life, and enable them to exist. I have endeavoured on the accompanying map to distinguish by a blue color the extension of this flat land. However small a claim this illustration (which in any case is rather too favorable than otherwise,) may make to accuracy, it will still show that the area of the inhabited land is but very small in comparison with that which still lies in its original condition. And even that flat land is far from being wholly overgrown with useful plants. On the Island Milu we made a path through the thickets which separate the cocoa-wood from the foot of the hill, and which wholly covers that ground so well fitted for the cocoa-palm; it was a rather lower, but less accessible, forest, on account of the large number of thorny *rotangs*. The cocoa-wood, which always forms the extreme border, does not solely consist of cocoa-palms, and is not to be compared with a regularly cultivated plantation of cocoa in India. Besides the plants used by the natives, hereafter to be mentioned, and which are especially to be found in the immediate neighbourhood of the huts, the cocoa-palms are intermixed with certain large forest trees, such as *Ficus religiosa, Hernandia ovigera, Baringtonia speciosa, Terminalia catappa, Cerbera odollam, Calophyllum inophyllum*. In places one can go about freely under the cocoa trees; sometimes the way is closed up more or less by high grass and small bushes and winding plants *(Panicum, Eleusine, Paspalum*, various kinds of *Justicia, Ipomea, Flagellaria Indica, Bidens, Spilanthus, Ocymum)*. In some places this wood stretches directly to the sea, and the cocoa-palms, or the colossal *Baringtonia*, undermined by springs, bend over it; but as a rule, in front of the wood on the white sand bank, springs up a crown of bushes, as *Hybiscus tiliaceus*, with great red and yellow mallow-like flowers, *Guettarda speciosa* with white pleasant-smelling flowers, and a very prevalent *Scævola* with fresh clear green leaves, and finally *Thunbergia grandiflora* with beautiful blue flowers, (the latter only on Great Nicobar).

As a rule one has not to go far along these coasts before the wood opens and the huts of the inhabitants show themselves. Their situation on the sea coast, and the cocoa-palms surrounding them, already gives an idea of the mode of life of their inhabitants. Their architecture reminds one most of the Eastern Indian Peninsula, especially in that very usual custom of erecting dwellings upon piles; while their miserable appearance indicates at the same time a lower stage of civilization. At a height of from 6 to 8 ft. above the ground, on from 12 to 18 piles, a floor is laid, and thereupon rises a dome-like roof made of matted palm-leaves, built either directly upon the floor, or with an intermediate side wall formed of boards or bamboos. A ladder, or the trunk of a tree cut into steps, leads to the narrow entrance of this dwelling, which everywhere bears the same stamp of simplicity and poverty, (*see plate Fig.* 1).

The men who inhabit these huts correspond perfectly in their outward appearance to what one would expect of them from a view of these surroundings. They go almost entirely naked; their gait and all their movements are sluggish and heavy; their look indicates a high degree of phlegm and indolence, and their speech is snorting and heavy. Their low stature, their powerful, although coarse, form of body, with broad feet, strong limbs, broad shoulders, short neck, their broad face with flat nose, large mouth and prominent jaw bone, and finally the brown (passing somewhat into a copper-red, but at the same time very uniform,) color of their skin would incline one coming from the more civilized parts of India to believe that one had arrived at the territory of a new race of men; for in vain would he look here for the noble features, the expressive look, the slender graceful stature, and the pleasant demeanour of the Hindoos. The Malayan race, of which the Nicobars may perhaps form the north-western limit, has, it is well known, no physical relation with the Indo-Chinese, but I do not possess the necessary knowledge with respect to the Burmese and Siamese to decide whether the Nicobarians stand nearer to them than to the Malay. I have heard people who had a perfect knowledge of those people of the Eastern Peninsula, and of their customs and language, express the same doubts; and here especially it is (where no historical or religious tradition, and perhaps not even the language, but only the physical character can lead one to conjecture) that that decision is very difficult; this may incidentally serve as an example of the gradual transition of the Mongolian race through the Indo-Chinese into the Malayan. However, so much is certain that, when I first came to Pulo Penang, and after I had seen in the streets of Georgetown the great mixture of the various Eastern Asiatic people, and went into the Malayan quarter of the town, I was immediately reminded, by the poor huts built on pillars and the strongly-built men in their simple dress and with a sullen stern countenance, of the inhabitants of these islands.

I have already mentioned that the *Pandanus* and the cocoa-palms supply the Nicobarians with the necessaries of life in the same manner as does the bread-fruit tree on the islands of the South Sea. The *Pandanus* is entirely indigenous to the islands; it belongs to their primeval forest, and is never planted or cultivated by the natives. In the swamps of the flat land, which these trees so well characterize by their remarkable forms,

they appear to flourish best; but they are also found everywhere else in the clearings of the forest, along the coast between the cocoa-palms, and on the dry grassy hills.

On this account, and also to obtain stems of trees for their canoes, the natives have made paths into the interior of the forest. Roxburgh (*Flora Indica*, T. III, p. 741) supposed that they belong to *P. odoratissimus*; but there certainly appear to be two species of which the fruit is used.

The same plant is found in various parts of India, but perhaps nowhere in such quantity and of such size; it is also cultivated to form hedges and, especially in Mauritius, to obtain fibre from the leaves for matting and bags; the fruit is also said to be locally added to their other eatables; but with the exception of the Nicobars there is probably no other place where it replaces the bread-fruit tree or corn. The oval fruit of one foot or more in length, consists of numerous separate angular wedge-shaped parts, red or orange, and partially separating from each other when ripe; they have then a sweetish taste, similar to that of yellow carrots, but on account of their toughness they cannot be eaten raw. When cooked and beaten up, the farinaceous mass between the fibres flows out, and is used as a pudding (called *mellori* by the Portuguese).

Just as the *Pandanus* characterizes the fresh-water swamps, so do the cocoa-palms the coral land on the external edge along the coast. Where this is not too low, so as to become mangrove-swamp, these palms are never absent. They are, therefore, certainly indigenous on the islands, but they owe their greater extension and development to protection by the natives, for it is all the wealth and enjoyment they possess. Beside the common cocoa-palm, a rare variety occurs, the fruits of which are filled altogether with kernel; I recollect having seen it only once. The trees are generally very close to each other, near the huts they are no doubt always planted, and as long as they are young they are protected by fences against the animals, especially the pigs; in eight years they begin to produce fruit, and do not then require any protection.

I have above attempted to give by a sketch an idea of the construction of a Nicobar hut, and selected for that purpose one of the best built in the purest style. I do not pretend to decide the class of architecture to which it belongs; but though the inventor may first have had a model of a beehive, and appears to have at the same time selected the most simple kind of pillars, still, on a close examination, not a small amount of art and conformity to fixed purpose will be found in the construction of the building. If one climbs up the small ladder and gets into the room, he finds it similar to the external shape of the hut, no partitions or furniture interfere with the view. Although this place is generally occupied by two or three families, the Nicobarians do not consider it necessary (I heard afterwards that they would even consider it a crime) to render social communication difficult by partitions. Beside some few implements for the chase and for fishing, put up under the roof, one generally observes the fire-place at the back of the room, made of sand and stones in a hollow of the floor, and over which are placed large earthen pots ready for the preparation

of *mellori*. The total want of windows is also remarkable; for the small hole by which one enters serves for all other purposes of admitting light, letting out the smoke, &c. However, one will find the half dark place at the same time agreeably cool, because, with the light, the large amount of heat reflected from the white coral sand is also excluded. They also assert that the want of a chimney is not only a saving of labor (which is highly valued by the Nicobarians), but that it produces, under the peculiar condition, a healthy atmosphere, the admixture of smoke neutralizing the dangerous vapours of the forest. The frame of the curved roof, made of *Nipa* (Atap) or *Pandanus* leaves, consists of bent sticks of *rotang*; it is very regularly constructed, and on account of its solid structure it does not permit either the sun's rays or the rain to enter. The raising on pillars further prevents the damp rising from below, admits a free current of air, and keeps the place clear of all kind of noxious animals. To estimate the whole work fairly one must also consider that there is not the slightest trace of iron, even a nail, in the whole building, and that the construction is simply made by the help of a large Malay knife. I believe, therefore, that European settlers on these islands first must adopt the Nicobar hut as a model for their house. This would certainly be the most appropriate and simplest way of avoiding the dangerous influence of the climate, at least as regards this part of the mode of life. The erection of such a building is the greatest and most laborious piece of work which the inhabitants undertake, and they never attempt the task without careful deliberation and long preparation. During our stay in the haven of Little Nicobar I had an opportunity of witnessing its importance. We had bought three huts from the inhabitants, and to inaugurate the great ceremony of beginning a new building great festivities were in preparation, to which a large number of people from other parts of the island were invited. All the people fit for any work from the neighbourhood of the harbour participated in this, and urged it as an excuse when I asked them to do anything for me.

Next to these occupations the Nicobarians have directed their attention to navigation and fishing. The huts are all situated on the shore, and the first thing one observes on landing is their canoes, which are drawn up on land when not in use, and covered with cocoa leaves as a protection against the sun. The hollowed-out trunk of a tree is here, as usually where navigation is yet in its infancy, the only means of communication between the different islands. They vary in length from 6 to 40 feet, and in one of the latter size 20 people can find room. To prevent the turning over of the boat two bars are fastened square to it, projecting 4 to 6 feet from the side, and at the end connected by a third and larger bar parallel to the boat, and thus keeping it in equilibrium. The people of Ceylon, and I think the Burmese and some of the Malayan tribes, also have this arrangement in their boats. On longer voyages they put up 5 to 6 small masts of bamboos with the sails made up of palm leaves sown together, and the ropes are of *rotang*, but the general mode is to use paddles of about three feet in length, with which they can indeed move about the boat with wonderful rapidity. The coral-reefs, which during high tide are covered by shallow water, form the principal fishing ground of the Nicobarians; they use for this small canoes; one man generally sits behind and

paddles, the other in front is always ready with his harpoon. This instrument consists of a bamboo stick with an iron fork at the end. I have several times admired how ably they discover and strike fishes swimming near the surface. The abundance of very good fish is perhaps the cause that their fishing apparatus is so simple and defective. Among others the Mackerel family are numerous, and species of *Scarus, Acanthurus, Hemiramphus* and *Belone*. Of the numerous crabs and molluscs to be found on the coast they also know how to make some good dishes. The largest hermit crab I ever saw was one with which I was once entertained in a hut on Nancowry. A large kind of lobster also appears to be common. They are also said occasionally to eat the large *Tridacnæ*. A small oyster *(? Ost. cucullata)* is often seen during low water attached to stones on Little Nicobar, and I have also seen a very large one *(O. hyotis)* in the Nancowry harbour with the natives.

From the consideration of these principal sources of subsistence of the Nicobarians,—the cocoa palms, the *Pandanus*, and the fishing,—let us again return to their domestic life, the huts in which they consume the produce of their diligence, and after the day's work enjoy their leisure in the circle of their family. The produce of the cocoa-palm appears here constantly in various forms. How many times have I refreshed myself with the cool water of the cocoanuts after I had returned from a tour in the hot sun to the coast! The Nicobarians themselves understand the value of this; I have never seen them drink any other water, and one does not observe anywhere wells or other kind of reservoirs. They use for this purpose young green nuts in which the kernel is only half developed yet, and rarely possess a stock of them in the house, but get them generally fresh from the tree every time they feel thirsty. For this purpose they have steps cut in the stem on which they mount as on a ladder; it is natural that they have great practice in this as well as in opening the nuts, which is done by two or three strokes with the Malayan knife. This cocoanut water replaces with them the common well water as well as tea and coffee; but the Nicobarians, like most other nations, have come to the conclusion that, besides quenching the thirst, it is possible to associate with drinking a certain stimulus to life, which can be obtained only from drinking, and this too is supplied to them by the grateful cocoa-palm. I will not decide whether their own instinct or the example of other more cultivated nations has taught them this; but it is certain that by cutting open the efflorescense of the cocoa-palm they obtain a quantity of a saccharine juice, the fermentation of which they know how to induce as well as any chemists. This palm-wine is obtained fresh in the morning, a very sweet and agreeable, but for Europeans certainly a very dangerous, beverage; by the evening it has already become strongly intoxicating, and it also becomes rapidly sour. They collect it in hollow cocoanuts hung upon the tree under the flower stalk; they then pour it into larger bamboo vessels from which they bring it up again by a siphon on to a filtering cloth.

The kernel of the nuts when half ripe is, beside the *mellori*, the daily food of the Nicobarians; and with the ripe kernels they feed their domesticated animals, fowls, dogs and pigs, which are running half wild about the huts. It is, therefore, not to be wondered at that they look upon the

cocoa-palm as the finest product of nature, that they do not consider anything worse than injury done to that tree, and that the form of their earthen pots and their baskets is borrowed from that of the upper half of the cocoanut shell, and, as I would almost be inclined to believe, the form of the roof on their houses from that of the lower half.

Besides this, various other plants are cultivated by the natives, such as do not require any particular care. One observes, generally, in the neighbourhood of houses under the cocoa-palms, or on open places in the forests, also in the interior of the islands, in valleys, and the lower parts of the hilly ground, small gardens, the size and cultivation of which generally indicate the industry and the prosperity of the proprietor. Under the cocoa-palms is often to be found a species of *Cycas*, from the fruit of which, of the size of a hen's egg, they obtain a kind of paste similar to the *mellori;* but seldom, because the preparation is more laborious. More common are the *Pisangs*, (plantains) of which there are several kinds, but mostly the largest and coarsest are planted. They are also occasionally seen growing wild in the forest; the plant is then very long and slender, and the fruit filled with hard kernels not eatable. Of plants, of which roots are obtained, mostly two species are seen, *Colocasia Indica* and *Calladium nymphæofolium;* they are also planted near the huts, but without any particular care, and supply only an inferior and coarse material for food. Further, we must mention the betel plant, of great importance for the natives, it grows both wild and cultivated. Tobacco was found only exceptionally, though this plant is considered equal to ready money on these islands. The most important spices used by the Nicobarians are some kinds of *Capsicum*, and the sour fruit of a wild *Amomum*. Pine-apples grow half wild, and attain to great perfection in spite of the little care which the natives bestow upon them, because they attach only a small value to the fruit. A large green variety is common; it has not got the usual fine flavour, but is, on the other hand, the more juicy and sweet. The *papaya* tree is found on nearly all the islands, and so is sugar-cane, although the Nicobarians do not understand how to prepare sugar from it, but only chew it raw. I will lastly mention a few cultivated plants which are occasionally seen near the huts, and were probably introduced by some accident, but to which little attention is paid by the natives; these are lemons and citrons, a kind of orange, with small red fruit introduced by the Moravian Brethren, solitary guava trees, mangoe, *Anona*; *Artocarpus incisa* (only on Car-Nicobar), *Bixa orellana*, *Janipa manihot*.

Cultivation of any kind of corn is unknown to the Nicobarians, neither do they make any attempt to obtain, by the introduction of seeds or of plants, the products which they know and value in their intercourse with foreigners, such as rice and tobacco, nor do they try to improve the cultivation of those plants which they know already. Seeds of various cultivated plants offered to them they refused with indifference. The *Pandanus*, as already mentioned, grows wild, and the help which nature gives them in growing the cocoa-palm requires only a small addition of labor on their part. The other plants, and especially the *Pisang* (plantain), they plant themselves, if they accidentally find an open place in the forest; they make for this purpose a hole in the ground with a knife. One cannot wonder, seeing this state of their principal occupation,

agriculture, that all their other industrial products bear in a high degree the character of simplicity, and appear to be calculated only to remedy the pressure of absolute necessity. Of this kind are the earthen pots for cooking; their fabrication is limited to the small Island Chowry, which supplies all the other islands with this article; it is therefore also the most populated, and they even say, though it sounds improbable, that the manufacturing industry here also produces the well-known disproportion which induces to emigration. The pots are peculiar; all of the same form of the half of a cocoanut shell, and, in proportion to their size, are light and thin. Besides this, basket-making is a common occupation of the Nicobarians, and especially of the women; they use for this purpose the *rotang*, and give to the basket also the shape of a cocoanut; they are without cover, and the opening is, when used, especially when fowls are kept in them, tied up by a string.

The care of pigs and fowls is further the daily occupation of the inhabitants; although they esteem pork very highly, they consider it such a great labor to catch and fatten the pigs, that they devote this trouble only to peculiar festivals; generally the pigs are seen wild, and are hunted by the natives with spears. Those which are about the houses are carefully fed with cocoanut kernels in troughs prepared for the purpose. They thrive very well on this food, and a fat pig, ready to be killed, is the pride of its owner both on account of the labor which he has expended upon it, and on account of the pleasures which its meat promises to afford.

Of how to spin and weave and prepare cloth the Nicobarians are perfectly ignorant. The little clothing they wear is one of the necessities which force them to an intercourse with other nations. Only on Great Nicobar we met with a kind of cloth prepared by hammering the bark of the *Celtis* tree; it is probably an invention of the savages who inhabit the interior, who never have had any intercourse with other nations; it was, moreover, found in their houses which we visited. Of the necessary articles which are imported, metallic implements come first, especially the Malayan knife or axe, with which they open their cocoanuts and build their huts and canoes. But their spears for killing pigs and the buffaloes on Carmorta, as well as the harpoons for fishing, are very peculiarly constructed, and are forged by themselves. They also know how to work up the silver which they obtain from ships into rings, and as they never give that metal away again, a considerable quantity of it has accumulated on the islands. Gold, however, they appear not to know at all.

What mental development can one expect from a people to which nature in this way offers the requirements for mere physical life; whose small society is isolated by the sea from other nations; whose home is not visited by any hostile natural condition calling forth their power and energy! In order to judge this properly it would be necessary to know more accurately, in addition to these external influences, the original character of that race from which they are descended. The Nicobarians stand, as regard their physical characters, between the Malays and Burmese. A thorough knowledge of the Nicobar, as well as the Malayan

(Indo Chinese) languages, in connection with a study of the inherited manners of these nations, would be the only; but at same time most difficult, means of discovering the home of the first, whether Burmese or Malayan-settlers in the Nicobar Archipelago. In any case, they appear to have greatly degenerated on account of their isolated situation, for neither of the religion nor of the civil institutions of those nations does there seem to have remained the slightest trace. I shall here limit my observations to the following facts.

The Nicobarians are in general of medium size and strong frame of body; sometimes athletic fellows are seen among them. Although one meets among them features quite similar to those among the Malays, it appears to me that I more frequently found among them a better countenance than among the latter. There were some young men among them extremely well built. As a rule, however, the mode of their outfit and supposed ornaments gives them a hideous and wild appearance. The whole costume of the men consists in a strip of blue cloth two inches broad; the women wear a larger piece of the same cloth similar to the *sarong* of the Malays. The latter generally cut off the hair of the head entirely while the men tie their long black hair with bands of *bast*. On festive occasions they hang wreaths of fresh foliage round their necks, or if possible necklaces of pearls or of silver coins. But most hideous is the manner in which they disfigure their teeth and their mouth, and which, as far as I know, is not found in any other nation. The frequent use of betel and lime in the first place gives them black teeth; this they attempt to increase by rubbing; they file off the enamel, and by manipulation with some kind of acid juices, they produce such an effect that the teeth swell to a spongy mass, and the front teeth combine with each other. In some individuals this does not succeed, but in others the incisors are actually changed into one continuous mass which projects from the mouth, because the lips cannot close on account of its large size. If you imagine such a mouth, covered at the same time with all kinds of chewed betel leaves, a face smeared with pork-fat and colored with reddish ochre, a cigar in each ear in place of the earring, you have a Nicobarian *á la mode* before you.

I have heard many different languages spoken, but none of them had so disagreeable a sound as the Nicobarian. The great number of guttural and nasal sounds, the uneducated drawling pronunciation, becoming still more difficult on account of the disfigured mouth, makes a very disagreeable impression. According to the opinion of those who know the Burmese, as well as the common Malayan dialect, no marked relation is said to exist between these languages and the Nicobarese. The French Missionaries, who were a few years ago on Terressa, must have spoken it rather fluently; a dictionary which they prepared contained names for abstract ideas which one would hardly believe to exist in the conception of these people. I mention here, as an example, only a few words which I have myself heard from the natives, and which I find noted in my diary:—*Nji*, house; *duă*, boat; *kamamlă*, sea; *mifhouniă*, heaven (sky); *baju*, man; *angana*, woman; *jenong*, cocoanut; *hibuga*, pisang; *coă*, head; *moah*, knife; *mangœ*, stone; *keiduma*, large knife; *tjiong*, ship, *unshougha*, to go; *ungha*, to eat; *humbaitsja*, small; *kji*, I; *mœ*, thou;

tsang kji, mine; *tsang mæ*, thine; *joot kjun mä*, where do you go to; *joot jo tol tjoong*, I go on board of the ship; *jo katog ita*, I remain here. The numerals are 1, *hæng*; 2, *ah*; 3, *loä*; 4, *foan*; 5, *tanein*; 6, *tafuet*; 7, *isat*; 8, *önfoan*; 9, *hänghata*; 10, *sam*; 11, *samhœng*; 12, *sam ah*; *&c., &c.* Most of them count only up to 10, and the expressions for the higher numerals are very complicated.

The Nicobarians appear to have scarcely anything corresponding to a state constitution. They stand towards each other on terms of perfect equality, and the women share all privileges with the men. That some among them call themselves captains or chiefs, who, through wealth and cunning, distinguish themselves above the rest in trade, and understand better how to traffic with Europeans, appears to be only a distinction in relation to Europeans; they can by such qualities, and by their superiority in physical force, certainly gain the esteem of their countrymen and thereby exercise much influence over them; but they possess, according to all appearances, no authority *per se*; they even make themselves sometimes ridiculous in the eyes of all the rest by their endeavours to imitate Europeans in dress and manners. These characteristics may indeed appear striking in comparison with the corresponding facts in the state of surrounding countries, but they can easily be explained by the isolated situation of the islands, and in consequence the small intercourse with other nations, as well as by the few necessities, the lazy character of the inhabitants, and the utter dulness of their affections; and they certainly do not place them in a superior, but rather in an inferior, position as compared with those related nations. They seldom steal anything from each other, simply because there is very little to steal; and they do not plot any evil plans against each other, simply because they do not plot any plans at all. Their constitution could perhaps be best compared with the patriarchal, in which family relations are predominant. This is especially the case on the southern islands, which are the least inhabited, and where there is no cocoanut trade with Europeans. The people live here in scattered huts; they appear to have common property in the cocoa-palms, and they seem altogether to be in the lowest condition. On the northern islands, on the contrary, there obtains a strictly separated proprietorship in every respect; but theft is not controlled by defined laws; if the thief cannot be persuaded to give compensation to the man from whom he has stolen anything, the latter must try to obtain satisfaction in a duel with sticks, or by surprise. If one has committed theft repeatedly, the other people agree with each other to kill him; this is then carried out on a fixed occasion by a common attack. It is, however, remarkable that the Nicobarians distinguish themselves above all eastern nations by their treatment of women. Polygamy appears to be perfectly unknown among them; but on the other hand the matrimonial connection is not particularly amiable, and separations are the order of the day. The marriages are concluded without any ceremonies. If a young man has selected a woman, he first keeps to the house of her parents, and should they then settle further to share lots with each other, they decide upon their future habitation. The usual number of children of such marriages is from five to six; if twins are born one is killed immediately; the bad care of the children causes a great mortality during childhood. Education does not much trouble the parents. While the women of the Hindoos and the

Malays are only considered as the property of the men, here they participate in their occupations and pleasures, only indeed so far as there is anything to share in these respects. It appears to me that the oppressed condition of the women of oriental peoples expresses itself in their exterior, their small growth, and a certain uniformity in their features. The Nicobar women are, on the contrary, of large stature and strong constitution, and I have reason to believe that they even occasionally exercise palpable authority over their men, and that a closer view of their matrimonial life would show that the respect of these people towards the fair sex did not, strictly speaking, originate in the free-will of the men, and is not, therefore, to be considered a virtue.

As to the rank in which science and arts are held by the Nicobarians, one can already conclude from what has been said. Their chief art and chief science, as well as industry, are concentrated in the *dolce far niente*. When they have cut their firewood in the forest, brought their *Pandanus* fruit, their cocoanuts, and full flasks of palm-wine, and tired by the hard work they have thus undergone, now rest in that half-dark interior of the hut, and in the most comfortable position they can obtain, enjoy the never-satiating odour of tobacco and the juice of the betel, what should induce them to move away from these sweet dreams and contemplations, except, perhaps, the vessel with palm-wine hanging below, or the *mellori* bread, of which they eat and devour huge pieces! Unfortunately this cannot last for ever, for Nature, which gives them these commodities of life, sends them also occasionally some evil interruptions to the quiet course of their life, and thus calls into action their capabilities of thought and invention. The Missionaries and Priests who came in contact with the Nicobarians have in vain attempted to find out whether they possess any idea of a highest being. If questioned about this they generally laugh indifferently as if they wanted to ask where would be the use of it, or they do not seem to understand the question at all. Of any inherited religious belief, as the so-generally known Buddhism among the Mongolian population, and before the Mahomedan among the Malays, there seems to be no trace. Their ideas of the invisible and supernatural are restricted to a dread of beings to whose influence they ascribe such unlucky facts as they cannot explain from familiar causes, especially illness, accidents during sea-voyages, and (rarely) also the failure of the cocoanut crop. These spirits, or *hivi*, reside in the interior of the forests of the islands, and only occasionally come to their habitations to cause illness among the people., &c. Only once I heard a man saying that these spirits also produce the growth of the tree. The whole *cultus* consists either in conciliating the *hivi* or in driving it away by force. Certain individuals among them, who call themselves *Malues*, consider the performance of those ceremonies as their special occupation; they represent the whole staff of learning; and are priests, physicians, and wizards at the same time.

Their occupation is generally hereditary from father to son, but every one else who feels a call to it can take it up by entering on a course of instruction with one initiated in the craft. The pupil stays during this apprenticeship in the house of the teacher, and must first prepare himself by a better and finer diet, especially consisting of fowls,

for his future avocation. The teacher then draws certain strange figures on leaves of the *Nibong* -palm, and after holding these before the eyes of the novice, he leaves him alone with the instruction to look through the holes of the floor till similar figures of beasts and men appear before him. If this does not happen, he repeats these ceremonies until the young priest believes he sees such figures. In cases of illness such a *Malue* is called in, and his cure consists then partly in the administration of certain plants, partly in the performance of some superstitious and very grotesque ceremonies. These people generally possess some authority, and wear as a badge of this a special neck-tie; they do not distinguish themselves, however, in anything else, and are often subject to persecution if unsuccessful in their cures. If several patients die to one *Malue* the people agree to kill him, and the murder is executed treacherously, by one coming to him under the pretence of friendship. As fortune-tellers they are also consulted, if one intends to make a voyage to a distant island, or if a ship is expected. In order to conciliate the *hivi* various other strange ceremonies and offerings are performed which are conducted by these priests. One meets everywhere in the huts and sometimes also in the forest various collections of pigs' jaws, of branches and plants, besides curious burlesque carvings, which must have some reference to these spirits. Lastly, there is every year, at the beginning of the dry season, a special festival held. A boat, of the size of medium-sized canoes, ornamented with masts and sails is carried about in the village, and after the *hivis* have been driven on board of it, it is placed in the sea, and committed to the mercy of the wind and waves.

As an expression of their religious ideas, the reverence which they pay to their dead may be mentioned. Although they do not possess a clear conception of immortality, or at least do not express it, they appear to suppose that the soul of the dead at first stays for a time in the neighbourhood of the hut in which the man lived. The dead are buried together in a place not far from the habitations; over each body is afterwards put a post on which are placed the utensils which he daily used. When I first came to the village of Malacca on Nancowry, the manner in which the natives had ornamented the grave of an English sailor boy (who was living with them for several years, and had accepted their customs,) with his dress, his axe and his open trunk made quite a touching impression. Three months after, a festival is performed in honor of the dead, on which occasion the host displays all the luxury he can afford. During my stay about Little Nicobar I had an opportunity of being present at such a festival to which I was urgently invited. The host received me on shore, accompanied with several guests, and brought me to his hut which was ornamented with fresh cocoa leaves and fruits. When I got up the ladder, and through the narrow entrance, from which a most awful noise was heard, I found the room so crowded that I hardly could get a place to stand. People from different parts of the island, whom I had never before seen near the harbour, were here assembled, sitting beside each other on a bench, and singing really deafening lamentations. The ceiling and walls of the hut were decorated with all the treasures of the host, which only could be brought forward on the occasion. One could see in the dim lamplight East India

cloth of various colors, coins, and all kind of silver plate with tastefully shaped loaves of *mellori* bread, cocoanuts, plantains and pine-apples among the fresh foliage. The scene had such an originally national character, that I mastered the frightful heat and the tobacco fumes in the narrow space to observe it for a few minutes. The host had taken the greatest trouble to provide for his guests the best food and palm-wine in abundance; above all, the pigs enclosed under the hut were his pride, and he counted them before me in a triumphant manner; for these cannot be wanting at any such festival. A barbarous custom, which however I did not see myself is, that they run a bamboo pole through the neck of the live pig, and then roast it on the fire. The following days are spent in constant revelling; the younger folks perform dances and fights, and make music on flutes and a kind of a guitar of bamboo with the string of *rotang*; the melodies which they sing during this play are not composed without talent, and can be fairly placed on an equality with the ordinary music of the Hindoos. After three years the corpse is again taken out and brought into the hut; they ornament the skeleton, give him a mouthful of brandy, and put a betel-leaf and a lighted cigar in his mouth. The same ceremonies are repeated every three years, up till seven trienniums, after which no honors are paid to the dead. Can any analogy in the customs at these obsequies be traced to that of other East Asiatic people? They form almost the only instance in the life of these inhabitants, in which they show a care for anything beyond the range of their immediate physical necessities.

The Nicobarians are not acquainted with any kind of signs for their words, letters, or numbers. They only count things which occur in commerce, especially cocoanuts, and to recollect the numbers they use marks in a stick. Not one knows how to tell his age: the time of the day they indicate by a reference to the height of the sun, and for this purpose either use the first finger or the pointed mouth. Longer periods of time they count according to the seasons or monsoons; but when they relate past events, contradiction or confusion often shows itself in their story, and the most important determination is always that it is a long, very long time since this or that happened. On Little Nicobar I saw with a man a small piece of wood in which he had begun to mark by incisions the number of weeks since we arrived; it is, therefore, clear that they also count according to the phases of the moon; but as formerly very seldom or scarcely at all has any one visited these southern islands, there was no by gone event of sufficient importance whereon to found an era. However miserable may be the national development, or the historical tradition of the Nicobarians, they still consider themselves, to whichever island they belong, as a distinct nation, as compared with foreigners, European or Asiatic. They have not got a special name for this nation, but they call themselves "*baju*," that is "*men*" (the same word also signifies *man* in opposition to *angana*, wife), and attach to it only the name of the island if necessary. If asked where their fathers came from, they do not know what to answer. But according to Rosen they are said to assert that they all came from Great Nicobar (*Laoi* in Nicobar), and this island is not in their language designated with the usual expression for an island, *pulonga*, but with a special appellation which may designate a continent.

Further, a legend seems to be current among them, which, in any case, indicates that they do not possess any pride of ancestry, and that they do not trace their origin from gods: a tremendous flood once carried off men and beasts; only one man on *Laoi* saved himself, mounting a high tree, and when he looked round after the water receded, he did not find in the solitude any other being except a bitch, of which he became enamoured, and to this pair the present population owes its origin.

Although the inhabitants of the different islands are identical in their principal characters, there exist between the northerners and southerners some differences, which most probably originated from the influence exercised upon them by foreign nations through commerce. In this respect the general fact exists that only the northern islands are visited by European ships, supplying cocoanuts to the Eastern Peninsula of India, while the inhabitants of the southern islands only communicate with the Malays; and in the same degree is the population smaller, their situation lower and poorer. However, between all the islands there exists a constant communication and trade, and I several times wondered at the rapidity with which news spread over the various parts.

The present articles of commerce are, besides cocoanuts, which are only exported from the northern islands, the edible birds' nests, ambergris and tortoise shell. The birds which supply these nests belong to various species of the genus *Collocalia*, and live principally on the southern islands. The sea had made locally in the cliffs of the soft sandstone large excavations, in which generally large numbers of these birds collect, and the floor of which is sometimes covered with a layer of guano from two to three feet thick consisting of the harder parts of insects, mixed up with small crystals of gypsum. The nests are very different in quality, because some only consist of the glutinous substance; others contain more or less of impurities. As a contribution towards a decision of the question often spoken of regarding the origin of the slimy substance, the fact may be mentioned that the cliffs in the neighbourhood of such a cave on Bompoka were covered with a gelatinous substance, probably an alga, and this had quite the taste of the nests. However, they are partly brought to the northern islands in exchange, partly sold for a small amount directly to the Malays and Burmese, who take them from thence into the Chinese trade. Ambergris is also mostly found on the shores of the southern islands, and is still highly prized in China; but the Nicobarians often adulterate it, especially with dammer resin which is obtained from several forest trees (*Canarium*), and is also an article of commerce. Besides cocoanuts there are also exported from the northern islands *areca-nuts* which grow in immense quantity; but as the Nicobarians do not take off the shell, which it is necessary to do for transport, the profit they might derive from the article is diminished.

In their intercourse with foreigners the Nicobarians do not show any particular inclination to cheating, though examples of this kind naturally do occur. However, as in the rest of their life, on this occasion also laziness and indolence prevail, and it always depends on their humour whether they feel disposed to offer their services to any one, or whether they enter into any trading transaction. Towards foreigners they always keep together as one nation. The Malays they hate and fear; still the Malay

language is the usual medium of converse with them. It may also serve as an example of the former influence of the Portuguese in India, that the Nicobarians all more or less understand Portuguese. In their intercourse with Europeans they show a ridiculous inclination to imitate them, which is perfectly foreign to the allied Asiatic nations, and characterizes their low childish grade of civilization. Nothing can make them more happy than European clothing, and they appear to have particularly noticed that which is most peculiar and most different from that of Asiatic people, namely the hat. Besides this, they are fond of taking European names, and often call themselves captains; on Car-Nicobar there is among others a Lord Byron and a Lord Nelson. When they are among themselves or with other Asiatic-born people such cumbrous dresses and honors are immediately laid aside. I have already mentioned the piratical attacks which occurred during the few last years; they do by no means serve to characterize the people. There are only the four above-mentioned examples known; the first was certainly caused by the dissolute behaviour of the sailors, and the succeeding appear to have been executed only by certain bands. On the contrary, the Nicobarians show themselves hospitable, and aid foreigners in distress; and when formerly ships were wrecked on their coasts, they have no doubt appropriated much of the goods, but they have received the shipwrecked and provided them with the necessaries of life. What coast exists on which no robberies and murders have ever been committed?

The group of islands consists of eight larger and twelve smaller islands; the total area of which may amount to somewhat above 30 square miles (German). The number of inhabitants may be estimated at five or six thousand, this proportionate population must, however, not be considered as so very small, if one takes into consideration that it is almost exclusively kept alive by the produce of the coral land. For, with the exception of a few small plantations of *pisang*, which are locally met with on open places in the interior between the hills, and which are of no essential importance for the sustenance of the population, the inner hilly parts of the islands are almost throughout overgrown with primeval jungle. A glance at the map will further show how small the area of that coast land is in proportion to the whole of the islands; it can be at the utmost only two or three square miles (German), and even of this there is some covered with forest; the productive part is moreover only very little cultivated, and for all that supplies to commerce a quantity of cocoanuts not unimportant for the consumption of this article in the Indian Peninsula, and which is taken from the natives at a proportionately very low price. How large might be the number of people which these islands could support, if the locally fertile soil was freed from forest and brought under suitable cultivation?

Car-Nicobar, the most northern island, is the best populated, and a long time since was visited by foreigners. The inhabitants, who probably amount to about a thousand, live in six villages and several single huts; they are superior to the other islanders in cultivation. The greater extent which the coral land has here, yields a considerable produce of cocoanuts, and the regular trade with them has developed among the inhabitants a certain idea of regularity and punctuality in the fulfilling of contracts, and this is what chiefly gives them their superiority over their

countrymen. They appear to know this also with a certain pride, and do not allow anybody to trade on their island, except the people of Chowry, from whom they obtain their earthen pots. They try to obtain from the captains with whom they deal testimonials of their good behaviour, and boast to be good people who have never taken part in robberies. It is supposed that 25 ships annually are supplied by them, each with 100,000 cocoanuts; so the export can be estimated at about two and a half millions yearly.

Batty Malve and Tillangchong are not inhabited.

Chowry is on the whole low and flat, only on the S. E. side there is a remarkable quadrangular cliff, about 300 feet high, with a plateau above of about 1,000 square yards. I have reason to believe that the interior of this hill consists of an older, probably a plutonic rock, round which terraces of coral limestone were formed. In spite of its small area it has about 500 inhabitants, who chiefly support themselves by the articles of pottery with which they supply all the other islands. Just as Car-Nicobar represents the commerce, this represents the industry of the islanders. The production of cocoanuts on this island being barely sufficient, even for the support of its inhabitants, there is no trade with foreigners, and the natives show themselves suspicious and reserved.

Terressa is said to have about 1,000 inhabitants, who also export large numbers of cocoa and *areca-nuts*, but have somewhat of an ill name on account of their taking part in robberies. A few French Missionaries stayed for several years with them; they appear to have made very little impression upon the stolid inhabitants in spite of their honorable and self-sacrificing endeavours; a few venerable long coats, in which some of the people parade about, seem to be almost the only traces of Christianity which they left behind.

The small Island of Bompoka forms, so to say, the centre of the plutonic masses, which were up-heaved from the bottom of the sea, and the tops of which rise here and there above its level, forming the whole of the northern group of islands. Whether on Bompoka an eruption of more recent volcanic rocks has subsequently taken place, and given the hills their present form, I cannot decide with certainty, for I could examine only a small portion of the island.

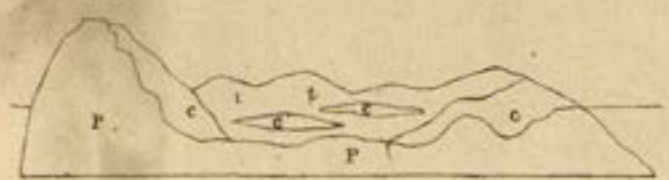
Carmorta, Nancowry, and Trinkuttee I have already mentioned. The splendid harbour which they include will make them important as a station in future colonisation, while, on the other hand, they mostly possess a soil less favorably adapted for cultivation than others. The inhabitants of Carmorta were chiefly guilty of robberies. This specially refers to a few villages on the western side at the Ulalla bay, the inhabitants of which did not like to show themselves, and have always distinguished themselves from the rest by a certain wild behaviour.

The southern group, to which geologically Katchall would also belong, is specially adapted for cultivation on account of its good soil.* Great and Little Nicobar are in their constitution closely related to each other. The eastern part of both is very high and hilly,

* Government may note this.

(Fig. 1, page 169.)

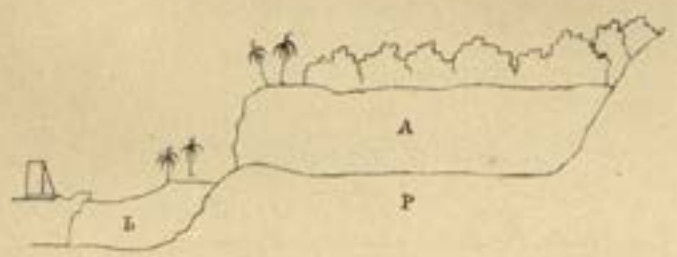
(Fig. 2, page 135.)



(Fig. 3, page 137.)

(Fig. 4, page 136.)

(Fig. 5, page 142.)



(Fig. 6, page 150.)

Geological Map
of the
NICOBAR ISLANDS.

Probable section on the line A B shewing the general relations of the two formations to each other

Lithographed at Simla at the Surveyor General's Office, January 1870.

and may not in great part be fit for plantations on account of the steepness; the highest points reach on Little Nicobar about 1,000, and on Great Nicobar about 2,000 feet. The western parts are, on the contrary, lower and more uniformly hilly; and if I am allowed to judge from the steepness of the hills which I have seen on Pulo Penang, cultivated with Muscat-nut and cloves, I would certainly believe that one-half of each of these two islands is adapted for cultivation. They are also made accessible by three good harbours, one on the northern side of Little Nicobar, and two (one on the north and one on the south) on Great Nicobar.

In other respects, as for instance the civilization of the people, these islands stand lowest. About 800 inhabitants live in scattered huts round their coasts, and that of the little Island of Kondul; they do not appear to have any trade, or even any distinct proprietorship regarding the cocoanuts. Only a few Malay and Burmese *prahús* occasionally visit the island, partly to fish *trepang*, partly to exchange knives and blue cloth for birds' nests and ambergris with the inhabitants.

The poor huts on the coast of Great Nicobar, built below precipitous wooded cliffs in the small northern bay, offered a most desolate prospect. Perhaps the inhabitants here may also suffer from attacks on the part of the savages living in the interior. What can be the grade of civilization of that human tribe who know nothing beyond the interior of the primeval forest of Great Nicobar, and who scarcely attempt to approach the people inhabiting the wretched huts on the coast? The Nicobarians always spoke of them with contempt, and ridiculed their savage mode of life. They said that they sleep on trees, run through the jungle like cats, buy knives from the coast inhabitants for bundles of *rotang*, but generally run away before them, or live at enmity with them, for they approach the huts at night to steal pigs and other things. They are said to be armed with wooden spears, and understand magic arts, by which they know how to catch snakes and crocodiles, and live on their flesh. Moreover they do not know any matrimonial connection, but live dispersed in wandering bands. The habitations which we met on our trip up the river belonged to these people, and the fire which was still burning, as well as a pig in a sty, indicated that the inhabitants left the place only a short time before we arrived. There was no trace to be seen to show that they live on cocoanuts, but there was a hearth arranged for cooking the *Pandanus* fruit strangely enough, of burnt bricks, and with pots of the large stalks of leaves of the *Nibong*-palm. That these people are the original inhabitants of the island is probable; but whether they belong to the Negro race, it was not possible to make out from the confused account of the Nicobarians. It is known that, in the interior of Ceylon, Sumatra, and the Malayan Peninsula, there dwell similar wild tribes different from the inhabitants of the coast; and the same thing occurs here, on that one of the islands which is the largest, and which contains the smallest number of coast inhabitants.

REMARKS ON THE MAP.

The accompanying Geological Map is reduced from one prepared by the officers of the *Galathea*, especially by First Lieutenant Rothe, and from his measurements. I have already given my reasons in explanation of the coloring of those places which I have not myself visited. Further, those places about which I have the greatest doubts are specially marked.

Remarks on the Flora of the Nicobar Islands.—Translated by N. WALLICH, M. et. PH. D., F. R. S., V. P. L. S., *from the original of* J. DIEDRICHSEN, ESQ.

IT has been usual to include the Nicobar Islands under the scitamineous kingdom of Schoŭw (the Indian of Roxburgh's), comprising the two grand Indian Peninsulas—Ceylon, the Maldives, the Laccadives, and the Andamans. But since scarcely more than the following plants of these islands were known at the time, namely, *Boerhaavia glutinosa*, Vahl; *Scirpus subulatus*, Vahl; *Cyperus cephalotos*, Vahl; *Pandanus mellori*, Roxb., or Nicobar bread-fruit (*Alex. Moon's View of the Plants of Ceylon*); *Davallia heterophylla*, Willd; and *Lindsaea lenera*, Dryand. (*Trans. Linn. Soc., Vol. III., p.* 42), it must have been the position of the islands between two continents which determined the point. The annexed list of the genera which occur on the Nicobars will demonstrate that this view has been very fortunate, a large proportion being likewise found on the Peninsula of India, as well as in Ceylon. But it will be remarked, also, that the vegetation is, as it were, a radiation from that question connecting it with the flora (the Polynesian kingdom of Schoŭw or Reinwardt) of the grand group of islands extending from Sumatra eastwards. This is pointed out by the genera *Dissochœa*, *Orophea*, *Pæterisanthes*, *Arthrophyllum*, and *Visennia*, characteristic of that kingdom. If the above view is correct, a tolerable idea of the Nicobar vegetation may be formed from what is known of the Indian flora (the continent and islands as far as the Phillippines, with a mean temperature of 15° to 25° Reaum.). It must be noticed, however, that there exists a geognostic difference between the southern islands (Sambillang, Little Nicobar, and Katchall) and the northern, and that hence a considerable difference is observable in the distribution and character of their plants. The first named islands seem to be composed of calcareous sandstone and claystone; both of these are easily affected by the condition of the atmosphere, the chalk is neutralized by the carbonic acid combined with rain; and, provided the rocky substratum be not very inclined, the soil is several feet deep and apparently very fertile, consisting of lime with sand and micaceous clay. We accordingly find these islands, although the highest of the whole cluster, forest-clad to the very top. Quite different is the appearance on the northern islands, where plutonian, especially serpentine, rocks predominate. Decomposition of these may in time produce a good soil, but the process goes on with far more difficulty than in the southern islands, consequently the soil here is much less abundant. Besides, it is only in Bompoka, Tillangchong and Terressa, that the surface is naked; in Nancowry, Trinkuttee, Car-Nicobar, and partly also in Terressa, the surface is hidden by a crust of strongly absorbent meerschaum-like clay, containing iron, talc, and sometimes chalk, but destitute of alkalies, covered partially by a stratum of soil only a few inches deep, and *unsuited for any sort of cultivation.* The undulating surface of these islands, contrary to what is seen on the sharp ridges of the southern group, is covered with grass only, without forest, having species of *Pandanus* and *Areca* in small clusters, or solitarily scattered over it. It is only in valleys, where a somewhat richer soil has accumulated, that large masses of trees are seen.

In comparing the vegetable features of these islands with those of the surrounding countries, I will, for the present, confine myself to those of the southernmost. The profusion of vegetation which covers these islands is probably nowhere surpassed in India. Nearly the whole area of the islands is covered with dense primeval forests: scarcely one open spot is to be met with where direct solar light admits of an herbaceous growth. But this overwhelming denseness is not owing to the predominance of a few social plants, as is the case in temperate zones, but results from a large number of species crowded together in great variety. This becomes at once obvious, when it is stated that, out of seventy-three dicotyledonous genera, eleven-nineteenths appear as trees or shrubs, occasionally *(Ficus)* in numerous species. But this luxuriance is not confined to the extent of the forests, it is manifest also in the grand and colossal size of the individual trees and shrubs composing them, and this applies likewise to the tropical richness of certain herbaceous plants *(Musa sapientum, Troglodytarum ?)*, and to grasses *(Bambusa)*. The *Galathea's* stay at the Nicobars was during the height of the dry season (January and February), and yet I do not recollect having observed one single sound tree in a naked condition; the forests being fully as verdant with foliage as with us in the month of June. This, however, is not dependent so much on a predominance of ever-green trees, which are of frequent occurrence *(Aurantiaceæ, Clusiaceæ, Rhizophoreæ, Myrtaceæ)*, as on their continued, or on the whole little interrupted process of vegetation. As an instance of this, I may mention that *Thespesia populnea, Paritium tiliaceum, Sterculia balanghas*, and *Sophora tomentosa*, trees with herbaceous soft leaves were not only in full foliage, but in flower and fruit. The trees in these ancient forests grow so closely together that they are compelled to shoot up in length, being most frequently without branches to a great height from the root, and the crowns so full of leaves, and so much crowded together, that they produce great darkness underneath. The leaves are frequently very large in size, such as many *Laurineæ, Mappa, Artocarpus, Uvaria, Barringtonia*. Trees with compound leaves are very frequent *(Mimoseæ, Papilionaceæ, Aurantiaceæ, Sapindaceæ, Canarium, Cuestis)*; sometimes they are very large *(Sapindus, Palma)*. As examples of herbaceous plants with very large leaves may be mentioned *Musa, Colocasia, Caladium, Asplenium, Nidus, Leea*. We are reminded of the high development and luxuriance of the vegetation of tropical India by such fruits as the shaddock *(Citrus decumana)*, the papaya *(Carica Papaya)*, the Atap *(Nipa fruticans)*; the jack *(Artocarpus integrifolia)*; the bread-fruit, *(Artocarpus incisa)*; the fruit of *Entada, Pursætha, Barringtonia speciosa*, and *Pandanus*. In the dense forest-shade alluded to, phœnogamous plants were rarely seen, the ground being, for the most part, occupied by impenetrable masses of vegetable in a state of decomposition, and it was only by glimpses that the crowds of climbing, twining, and parasitical plants, occupying the tops of the trees, could be discerned. On the smaller islands, *e. g.*, Pulo Milu, and along the sea shores of those of greater size, as well as generally wherever the forests were less dense and dark, an underwood appeared, which consisted most frequently of species of *Guilandina, Psidium, Bridelia, Gelonium, Feronia, Orophea, Nauclea, Marinda, Jasminum, Elagnus, Boehmeria, Epicarpurus, Ficus (racemosa.)*

These were again intermixed with an endless pell-mell of twiners and climbers, the former chiefly consisting of graceful ferns *(Lygodium, Menispermeæ)*, numerous *Convolvulaceæ*, *(Ampelideæ, Cucurbitaceæ)* species of *Aristolochia, Roxburghia, Smilaceæ* and *Piper*. The large trees were strung with mighty twiners, such as *Mucuna, Canavalia, Pongamia, Conocephalus*, and the gigantic *Entada Pursætha*, while their trunks supported half parasitical *Ficus* species, *Hoya viridiflora, Pothos scandens*, elegant *Lycopodia* and many ferns *(Antrophyum, Vittaria, Asplenium*, the luxuriant *Asplenium Nidus* being the most conspicuous among them. Of *Orchideæ* there were only few in number, as well as in species *(Dendrobium ?)*: they were somewhat withered, and were the only plants which pointed at the aridity of the season. The underwood is so dense as, on that account alone, to be very difficult to traverse; but it becomes entirely impenetrable on occasions, which not unfrequently occur, when it is overgrown with species of rattan *(Calamus)*. Their leaves, from ten to twelve feet long, are densely armed below with thorns of several inches, while their elongated midrib, eight to twelve feet long, is densely beset with recurved hooks. Here none but the natives are able to penetrate by the aid of the cutlass, which they wield with great dexterity and celerity.

I may likewise add, that nowhere have I seen such vast primeval forest, with such dense and impenetrable underwood, as I found here on the Southern Nicobars. At the neighbouring Pulo Penang, for instance, neither are the still remaining forests so grand, nor the underwood so crowded, as to prevent their being traversed with small difficulty. As I have said already, the dense part of the forests, in which underwood is mostly wanting, is peculiar to the southern islands, while the more open portion, which is furnished with underwood, is much narrower on the northern islands, with the exception perhaps of Car-Nicobar, its outer margin imperceptibly dwindling into the vegetation of the more recent alluvium. It is frequently extended towards the interior, into low valleys, without being met there by any dense forests. On the contrary, the forest becomes more open and low, and is gradually succeeded by a number of elegant shrubs, chiefly of the genera *Ixora, Inga, Cassia, Colubrina, Flemingia, Bauhinia, Vitex, Mæsa, Erycibe, Leea, Rubus, (moluccanus,) Mussœnda, (frondosa,)* and *Melastoma, (Malabathricum,)* mixed with shrubby or arborescent ferns. Heath-like tracts covered with a sort of fern *(Gleichenia,)* or luxuriant grass-plains, occasionally take the place of those shrubs.

Within the belt thus formed, the hills are on the whole covered with grass only. The sod towards the inner confines of the forest, at places where the soil is richer and more moist, is formed of soft, juicy grasses, and in part of stiff and arid sorts of *Cyperaceæ* (*Scleria, Cyperus, Diplacrum*), but the greater area is occupied by more delicate, yet dry and stiff, grasses, among which a species of *Imperata* (*Lallang*) performs an important part. This is almost the only plant on the Nicobars which, being in the highest degree social, occupied whole tracts of land, excluding all other lower vegetation, and admitting only here and there on the borders the growth of other sorts of grasses, and of some species of *Alysicarpus, Desmodium, Uraria, Smithia*, and *Crotalaria*,

which may be compared in some degree with our clovers. Towards the top of the hills even the grasses become scanty and stunted, ceasing at length altogether on spots where the clay is covered by a coarse sand, containing some iron, and washed into barrenness by the frequent falls of rain, and producing only few and poor plants of species of *Leucas*, *Aerva*, and *Evolvulus*. Although all these grass-plains possessed some degree of freshness, yet they exhibited such a uniformly arid, barren, desert-like picture, as to have nothing like it in our country. With us, the meadows, apart from the difference in the soil, produce such variety of species, and in such profusion and luxuriance of growth, that by way of distinction, the grass lands of the Northern Nicobar Islands might, without impropriety, be designated as grass heaths; even the soft and undulating outline of the hills contributed to this fatiguing uniformity of scenery, very sparingly relieved by the scanty and small clumps of *Areca* and *Pandanus* species. In this last respect the Island of Bompoka differs. It has a rounded form and bold volcanic elevation; it terminates abruptly, with an extensive crater like depression, overgrown by a dense forest, in which *Areca*-palms rise above the other trees, while the sides are strikingly varied by a number of radiating ridges and valleys, resembling in this respect the Island of Madeira on a small scale, and exclusively covered with the before-mentioned grass carpet.

The heights, as well as the skirting flats, which form the greatest part of the area of these islands, participate in the sort of vegetation alluded to; but the more-recently formed low-lands, though of less extent, are of far greater importance to the natives; and however different in regard to their origin and structure, the social character of many of their trees and shrubs is very striking, when contrasted with the varied constituents of the old forests. Along the coast extends a narrow slip of land consisting of fragments of corals, mixed up with *débris* of old rocks, becoming more predominant as the tract recedes from the sea. Here and there it is interrupted by precipitous rocks, or the accumulation of fresh water. On the whole, the slip is narrower and of less extent on the southern islands; and, since it constitutes the principal portion of the cultivable land, the consequence of this disparity is, that the population of the northern island is far greater than that of the others. The sea beach is elevated some feet by the force of the wind and waves, and consists of dazzling white coral band; and, beyond the reach of the high tides, it shelters a narrow band of low, creeping plants, a kind of *Ischæmum, Dolichos luteus* and *Convŏlvulus maritimus* (so common on all tropical sea-shores). Beyond this band, wherever nature has not been disturbed, is seen a dense vegetation formed by two shrubby plants only, namely, *Tournefortia (argentea?)* and *Scaevola Taccada*, to the exclusion of all others, and, indeed, of each other reciprocally. Thus, the former occurs in great abundance on the island of Trice, the latter not at all; while the reverse is the case on the adjacent Pulo Milu. Both these plants grow so close together and with such fresh luxuriance, that they look like some neatly trimmed hedge. The silvery *Tournefortia* attains a height of twenty feet and is distinguishable even at a distance by its greyish tint; while the dense-leaved and pale-green *Scaevola* luxuriates in all the vigour of a vernal freshness; but it is often, together with the

Ischæmum beyond, overgrown by large masses of a pale yellow, leafless, filiform social parasite, the *Casytha filiformis*. Within or beyond this fence, rarely on the sea-side of it, we have a variety of trees, which are either not found at all elsewhere, or appear here in greatest number, although they do not belong to the social class. Among the commonest is the magnificent *Baringtonia speciosa*, *Guettarda speciosa*, which perfumes the air after the sun has set, *Calophyllum inophyllum*, *Paritium tiliaceum*, *Thespesia populnea*, *Heritiera litoralis*.? *Hernandia ovigera* and *Sterculia Balanghas*. Of smaller size, but not less striking by their frequency, are species of *Sophora (tomentosa)*, *Canavalia*, *Bridelia*, *Glochidion*, *Mappa* and *Ricinus communis*; this last on Katchall was of the size of a tree twelve to thirteen feet high, with seeds much smaller than what is usual when it is herbaceous; and it formed a thick grove, occupying several acres, probably the result of cultivation. But it is the cocoanut, almost the only plant cultivated with any sort of care by the inhabitants, which occupies the largest space of the coral land, and at once attracts the eye of the new comer, both by its numbers and form, all the other vegetation, however striking, forming as it were only the framework to this palm. I am not aware of the cocoa occurring any where beyond the coral land, with the exception of the little elevation of about 100 feet of the small rocky island of Montchal: and the upper part of the river of Little Nicobar; it is planted without any regularity, and more closely than in many other parts of India; neither is it kept free from weeds or sometimes even a dense coppice, nor are the older trees surrounded by a circular ridge for the purpose of irrigation in the dry season; and yet I know not that I have seen it any where in greater luxuriance, or producing a greater quantity of fruit, than on the Nicobars.

There is a fresh water pool nearly in the middle of Milu, leaning on sandstone and clay slate formations to the westward, but in other directions surrounded by coral land. Its fine, dark, peat-like soil, was still, towards the end of the dry season, very moist, and so unresisting that you everywhere sank down. There was none of the lower vegetation here but so much the greater abundance of *Pandanus* and *Areca*, especially the former, which, although growing frequently and luxuriantly everywhere, and constituting one of the most striking features of the Nicobar flora, seems at this place to attain its greatest development, both as to numbers and dimensions. It was from thirty to forty feet high, and more, dividing four to six times into branches, and bearing fruits of eighteen to twenty inches in length. On another island, Trice, there was a somewhat similar pool of fresh water, differing in this, that it had no vent towards the sea-side, so that it must be like a small lake during the rainy season. In February it was almost dry, the soil contained much less humus, and supported a low vegetation *(Helminthostachys dulcis)* with few *Pandani* only, while there was a surrounding high, open forest of various species of *Ficus* and of *Baringtonia racemosa*, with an underwood of *Feronia elephantum* and an *Ardisia*. I know of no other pools on the islands like the above; but on the Galathea river, on the river which falls into the bay of Pulo Milu, and probably often on the large islands, extensive breaks in the coral land are caused by the so-called mangrove swamps. The inner part of the bay just mentioned,

where the river empties itself, is covered with slime, on which, during the ebb-tide, there are only a few feet of water, and where a stray little mangrove is only rarely observable; but where the sea recedes entirely during its ebb, the mangrove thicket commences, covering perhaps the other two-thirds of the valley through which the river flows. This whole extent is covered with brackish water during the flood tide, and during the ebb the mud contains rich quantities of Crustacea and Mollusca. With exception of the mangrove *(Bruguiera gymnorrhiza)* and a less frequent Acanthaceous plant *(Dilivaria)* there is no other vegetation. Close to the margin of the bay, the first forms a very dense shrubbery, not unlike an alder coppice; but it soon becomes a high and open forest, made difficult of access by the deep mud, and the knee-formed roots projecting above it. Where the influence of the tides ceases, the mangrove disappears with it; and so far as the river inundation extends during the rains a varied vegetation flourishes, consisting of *Ficus, Pandanus, Flagellaria, Calamus, Inga, Cordyline,* the wild plantain, arborescent ferns, *Convolvulaceæ,* and receiving a remarkable feature from the very frequent Atap *(Nipa fruticans)*, a stemless, palm-like plant having its large fruit often ripening under the water. As soon as the river sides rise several feet above the water, the Atap disappears altogether, and vegetation becomes very beautifully rich; still open forests contain *Pandani* and *Areca* palms, and are succeded occasionally by open tracts of luxuriant shrubby or arboreous ferns, *Melostoma,* high grass, *Rubus, Carica, Papaya,* or occupied by the little partly enclosed gardens of the natives, in which the sugar-cane, the cocoanut, oranges, bananas, yams *(Calocasia indica* and *Caladium nymphæifolium)* thrive to a degree of perfection, which points at this tract as the most fertile on the island, and as that which, in case of colonization, would be the principal land to cultivate, the coral-land being almost entirely occupied already.

Finally, the coral-land is interrupted occasionally by rocks projecting into the reef, which is inundated during flood tide. Here the elevated sea beach does not exist; and the almost bare rocks are characterized by a very common *Casuaria,* and also a *Callicarpa* and a *Sponia* (*Celtis vestimentaria,* Kamphövener). It will be noticed, in the accompanying list of genera of plants found on the Nicobars, that a number of forms are wanting which, considering the geographical position of the islands, might have been expected in it; for instance, *Ceratopteris, Marsilia, Stratiotes, Nepenthes,* and *Quercus* all of which occur on the neighbouring Pulo Penang, to the extent of nine species of the oak alone. This deficiency may be owing in part to there being no open stagnant water on any of the group (excepting perhaps Trice), and partly also to our brief examination having taken place during the dry season, not reaching at all to the extensive wooded heights of the islands.

Enumeration of 261 genera found on the Nicobars, distributed into ninety-nine natural orders:—

Mimoseæ—*Inga, Acacia, Entada, Mimosa.*

Leguminosæ—*Bauhinia, Cassia, Tamarindus, Guilandina, Sophora, Dalbergia, Pangamia, Abrus, Flemingia, Numismia, Cajanus,*

Dolichos, Mucuna, Canavalia, Clitoria, Alysicarpus, Dicerma, Desmodium, Uraria, Smithia, Crotalaria.

Rosaceæ—*Rubus.*

Myrtaceæ—*Barringtonia, Eugenia, Psidium.*

Melastomeæ—*Dissochæte, Osbeckia, Melastoma.*

Oenothereæ—*Jussicua.*

Rhizophoreæ—*Bruguiera, Rhizophora, Carallia.*

Combretaceæ—*Combretum.*

Ochnaceæ—*Ochna.*

Connaraceæ—*Cnestis.*

Burseraceæ—*Canarium.*

Anacardiaceæ—*Semecarpus, Rhus, Mangifera, Sorindeia.*

Euphorbiaceæ—*Glochidion, Cicca, Phyllanthus, Bridelia, Gelonium, Ricinus, Mappa, Claoxylon, Manihot, Acalypha, Euphorbia.*

Rhamneæ—*Cullubrina, Gouania.*

Hippocrateæ—*Salacia.*

Celastrinæ—*Euonymos.*

Pittosporeaæ—*Pittosporum.*

Polygoleæ—*Polygala.*

Sapindaceæ—*Schmiedelia, Sapindus.*

Aurantiaceæ—*Triphasia, Atalantia ? Citrus, Glycosmis, Feronia.*

Clusiaceæ—*Garcinia, Calophyllum.*

Dipterocarpeæ—*Terminalia.*

Chlænaceæ—*Hugonia ?*

Tiliaceæ—*Grewia, Elæocarpus, Monocera.*

Byttneriaceæ—*Visenia.*

Sterculiaceæ—*Sterculia, Heritiera, Helicteres.*

Malvaceæ—*Paritium, Thespesia, Urena, Sida, Hibiscus, Abelmoschus.*

Cucurbitaceæ—*Lagenaria, Momordica.*

Papayaceæ—*Carica.*

Bixaceæ—*Bixa.*

Nymphæceæ—*Nymphæa.*

Capparideæ—*Gynandropsis, Polanisia.*

Anonaceæ—*Anona, Uvaria, Orophea.*

Myristiceæ—*Myristica.*

Menispermeæ—*Menispermum, Cocculus, Stephania.*

Loranthеæ—*Loranthus.*

Ampelideæ—*Leea, Cissus, Pterisanthes.*

Araliaceæ—*Aralia, Arthrophyllum.*

Umbelliferæ—*Hydrocotyle.*

Sapoteæ—*Sideroxylon.*

Myrsineæ—*Ardisia, Mæsa.*

Ebenaceæ—*Diospyros.*

Bignoniaceæ—*Spathodea.*

Acanthaceæ—*Thunbergia, Dilivaria, Justicia.*

Scrophularineæ—*Bonnaya.*

Solanaceæ—*Capsicum, Datura, Nicotiana, Solanum.*

Hydroleaceæ—*Hydrolea.*

Convolvulaceæ—*Convolvulus, Ipomœa, Erycibe, Lepistemon, Aniseia, Calonyction, Evolvolus.*

Asperifoliæ—*Ehretia, Tournefortia.*
Cordiaceæ—*Cordia.*
Verbenaceæ—*Vitex, Premna, Clerodendron, Callicarpa.*
Labiatæ—*Ocymum, Stachys? Orthosiphon, Leucas.*
Asclepiadeæ—*Hoya, Sarcolobus.*
Apocyneæ—*Alstonia, Cerbera, Tabernæmontana.*
Loganiaceæ—*Fagræa.*
Oleinæ—*Chionanthus.*
Jasmineæ—*Jasminum.*
Rubiaceæ—*Mussænda, Ixora, Nauclea, Serissa, Psychotria, Guettarda, Ophiorrhiza, Morinda, Hedyotis, Gonotheca.*
Lobeliaceæ—*Lobelia.*
Goodeniaceæ—*Scævola.*
Compositæ—*Ageratum, Cyanopsis, Vernonia? Wedelia, Eclipta, Adenostemma, Bidens, Spilanthes, Conzya?*
Aristolochieæ—*Aristolochia.*
Eleagneæ—*Elæagnus.*
Hernándiaceæ—*Hernandia.*
Laurineæ—*Polyadeniæ, Lutsia, Cassytha.*
Polygoneæ—*Polygonum.*
Amarantaceæ—*Aerva, Alternanthera, Achyranthes, Desmochæta.*
Antidesmeæ—*Antidesma Lepidostachys.*
Urticeæ—*Elatostemma, Boehmeria, Parietaria, Urtica.*
Artocarpeæ—*Ficus, Artocarpus, Conocephalus.*
Moreæ—*Epicarpurus.*
Casuarineæ—*Casuarina.*
Piperaceæ—*Piper.*
Palmæ—*Cocos, Areca, Calamus.*
Pandaneæ—*Pandanus, Nipa.*
Aroideæ—*Caladium, Colocasia, Pothos.*
Najadeæ—*Zostera.*
Musaceæ—*Musa.*
Cannaceæ—*Canna.*
Zingiberaceæ—*Alpinia* (*Ophœnicea*, Kamphövener,) *Amonum fructuacida* (Rink).
Orchideæ—*Dendrobium.*
Bromeliaceæ—*Ananassa.*
Amaryllideæ—*Crinum.*
Hypoxideæ—*Curculigo.*
Dioscoreæ—*Dioscorea.*
Smilaceæ—*Roxburghia, Smilax, Cordyline.*
Junceæ—*Flagellaria.*
Commelyneæ—*Commelyna, Tradescantia.*
Eriocaulbœ—*Eriocaulon.*
Cyperaceæ—*Cyperus, Kyllingia, Scirpus, Fimbristylis, Haplostylis, Diplacrum, Scleria.*
Gramineæ—*Oplismenus, Panicum, Ischæmum, Andropogon, Paspalum, Manisuris, Dimeria, Isachne, Imperata, Saccharum, Bambusa, Pennisetum, Dactyloctenium, Phragmites, Sporobolus, Eragrostis, Poa.*

Cycadeæ—*Cycas.*
Lycopodineæ,—*Lycopodium.*
Ophioglosseæ.—*Helminthostachys.*
Marattiaceæ—*Angiopteris.*
Schizeæ—*Lygodium.*
Gleicheniеæ—*Gleichenia.*
Hymenophylleæ—*Trichomanes.*
Polypodieæ—*Dicksonia, Davallia? Lindsæa, Aspidium, Diplazium, Asplenium, Pteris, Vittaria, Adiantum, Pleopeltis, Polypodium, Blechnum, Gymnogramma, Antrophyum, Acrostichum.*

Extract from the "Voyage of the Austrian Frigate Novara" *(Statistiscs Commercial Part, Vol.* I, p. 291.*)*

The Nicobar Islands in the Bay of Bengal.

6° 50′—9° 10′ N. Lat.
93°—94° E. Long.

(Period of stay from 23rd February to 26th March 1858.)

The Nicobar Islands lie on one of the most frequented pathways of commerce in the world, and one which will be rendered still more important by the completion of the scheme of railways from Belgrade to the Persian Gulf, as well as by the opening of the Suez Canal. A circle of a radius of 1,200 (*i. e.*, 1,373⅓ English miles) nautical miles, drawn with this archipelago as centre, would embrace within its circumference the most important ports of India, Ceylon, the Isles of Sunda, and Cochin-China. Moreover the value of this island group is further enhanced by the fact that the prevailing regular winds materially facilitate communication with the neighbouring coasts. These are the N. E. monsoon* from November to March, and the S. W. monsoon from May to September inclusive.

April and October have variable winds, which extend more or less into the months immediately succeeding.

The cyclones of the Bay of Bengal never touch the Nicobars. These so-much dreaded storms emanate sometimes from the Andamans, sometimes from the west coast of Sumatra, and their course lies, in the former case, towards the north of the Gulf, in the latter, towards Ceylon and the Coromandel Coast. During the S. W. monsoon (May to September), to which period the rainy season belongs, violent thunderstorms frequently occur. The dry N. E. monsoon brings fair weather, but at times blows very strong.

The climate of the Archipelago, though tropical, is not to be classed among the hottest known, solely because it is an insular climate, and the

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* The trade winds, (Germ.—*Passat-winde*; French—*Vents alizés*), those constant wind-currents in the direction from the poles towards the equator, which make themselves felt on the earth's surface in tropical regions, and which blow N. E. in the northern, and S. E. in the southern, hemisphere, exhibit sometimes, (*e. g.* in the Indian and Chinese seas) diversions due to the formation of the adjacent continents. In the winter of the northern hemisphere, when the air cools down over the Asiatic continent, the N. E. trade-wind does blow towards the region of calms, a region about 6° in width: but in summer so high a temperature is developed over that continent that the S. E. trade wind of the southern hemisphere is drawn far across the equator, and in the northern hemisphere by reason of the earth's rotation becomes, according to the law of rotation, a regular S. W. wind. These winds, which change every half year, are called monsoons or moussons (Arab—*mausim*; Sansk.—*kutika* or *masa*; Pers.—*mouzun*, or season-wind). The Malays, to be more exact, add to the word *mausim* the descriptive term 'east or west,' *timur* or *barat*, (in Javanese *wetan* and *kulan*). The winds which blow in the Malayan Archipelago are nevertheless not two-fold, but really four-fold; the N. E. and S. W. monsoons to the north, and the S. E. and N. W. monsoons to the south of the equator. The northern portions of Sumatra, Borneo, and Celebes, as also the whole of the Malayan Peninsula, and the entire group of the Philippines are subject to the two former; while the two latter prevail in the southern portions of Sumatra, Borneo and Celebes, and likewise in all islands from Java to New Guinea south of the equator.

islands are thickly covered with wood. According to the meteorological observations instituted, the mean annual temperature ought not to exceed 25° centigrade, a temperature which is nearly the same as that of the fresh unripe cocoanut. But in April and October, when frequent calms prevail, the maximum temperature may very possibly reach 30° or 31° centigrade.

Looking to the very considerable amount of downpour, and to the circumstance that the dry period of the N. E., and the wet period of the S. W., monsoon do not appear so sharply divided as on the main land, and that even in the course of the dry season thunderstorms and violent showers not unfrequently occur, the annual rainfall must be large; at any rate it cannot be less than 100 [German] inches, and may come up to 150 inches. Surprising as these figures may seem compared with the rainfall in various parts of Europe,* they are far from reaching those exhibited by other regions exposed to the regular change of monsoon; *e. g.*, the Straits of Malacca, where the annual rainfall reaches 208 inches, or Mahableshwar, where it even amounts to 254 inches. The driest month of the year in the Nicobars is probably March. We experienced during the whole of that month, whether on the islands or in their neighbourhood, only three heavy showers. In April these showers begin to get more frequent, till at last in May and June heavy storm-clouds continuously empty themselves over the islands. Accordingly, except where special geological peculiarities, as for instance the marl formation of the northern group (particularly on Nancowry, Carmorta, Trinkuttee, Bompoka, and Terressa), necessitate a speedy off-flow of the rainfall, these islands must generally have an abundant water supply.

The total area of the whole Archipelago amounts approximately to 545 nautical square miles, or 735·5 English square miles.

The ground may be roughly divided into the following principal classes with reference to its geological qualities and greater or lesser fertility :—

Vegetation.	Corresponding geological basis.	Character of the soil.	Percentage to total area.
Mangrove ...	Salt water swamp, and moist salt water alluvium.	Unculturable swamp.	5
Cocoa-palm ...	Coral conglomerate; coral sand; dry marine alluvium.	Fertile lime soil: principal components, carbonate and phosphate of lime.	5
Plantain ...	Fresh water swamp, and fresh water alluvium.	Fertile swampy soil, unsuited for tillage.	5
Grass exclusively ...	Plastic clay; marl and serpentine containing magnesia.	Barren clay soil, silicic acid, argillaceous earth, and silicate of magnesia.	15
Mixed primeval forest.	Coral conglomerate sandstone, clay slate, gabbro, dry river alluvium.	Loose, clayey, fertile sand soil, rich in alkalis and lime.	70

* In Central Europe the annual rainfall ranges from 20 to 40 inches.

If we only reckon 70 per cent. of the total superficies of the islands as culturable, we have a productive area of 384 nautical, or nearly 520 English, square miles. But even the ground, which is at present exclusively covered with grass vegetation, might, with the extension of proper cultivation, be made remunerative, and the islands, which are now peopled by barely 5,000 souls, might easily and profitably accommodate more than 100,000 inhabitants.

At present the principal product of the Nicobars is the cocoa-palm, which grows chiefly on the sea-shore, as far as the coral sand extends, and seldom pushes far inland, for which reason it was appropriately named by Martius, that most meritorious student of the palm family, the "sea-shore palm." The settlements of the indolent inhabitants of the Nicobars, who have neither tillage nor other industry, are therefore confined to this tract. Few natives could ever have been induced to go into the interior of the islands. The same kindly plant which affords the natives food and drink also brings them into involuntary contact with civilization, and becomes the means of introducing those wants and objects which are the result of a higher degree of development. Ripe cocoanuts form the chief article of export of the Nicobar Islands; edible birds' nests, tortoise-shell, ambergris, *trepang*,* &c., being of little importance as exports, are only shipped as secondary freight. According to printed returns, the northern islands are said to yield annually ten million cocoanuts, of which, however, at present, hardly more than five millions are exported,—three millions alone from Car-Nicobar, and two millions from all the other islands together. As this important fruit is here six times cheaper than on the coast of Bengal, or in the Straits of Malacca, the number of English and Malay vessels that come here (principally from Penang) to ship cocoanuts, is every year increasing†. The trade is carried on not in cash, but by barter, though silver has already a high value; and, notwithstanding all that is talked of the greediness of the Nicobarians for tobacco, glass-beads, and gewgaws, the truth of the proposition that money is the most current ware is even there justified.‡

The favourite articles of barter are cutlasses (like the *machetes* or wood-knives of the South American Indians), table-knives, axes, muskets, calico, and other colored cotton stuffs, salt meat, biscuit, onions, rice, American chewing-tobacco (in sticks), medicines (salts, spirits of camphor, peppermint, turpentine, eau-de-cologne, castor-oil); silver wire, beads, rum and old clothes; above all, black felt hats, the strange preference for which may arise from the fact that the natives

* This is an edible species of *holothuria* or sea-slug (*Holothuria edulis*), called in Chinese *hai-shin*, and in French *bichē-de-mer*. In China and Japan it is used in a dry state as a costly dainty and aphrodisiac, and consequently forms an important article of trade, and every year its collection and transport affords employment to a large number of ships. More than 12,000 piculs of this worm-like creature, worth, according to quality, from 8 to 100 dollars the picul, are yearly brought into the Chinese market from the Malay Archipelago and the South Sea Islands.

† In Penang harbour a picul of cocoanuts (113⅓ German lb, or about 300 nuts) is worth 5½ Spanish dollars, *i. e.*, £1 3*s*. 10*d*., one Spanish dollar being equal to 52 pence, English.

‡ Of silver coins, however, the natives only know and will only take rupees, Spanish dollars, and English six-penny pieces, which they call "small rupees." On the southern islands, gold is still completely unknown, and therefore worthless in the eyes of the inhabitants.

sometimes see the captains of English ships wearing black hats, and so come to regard this article of dress as a token of the position of captain or man in authority. On the Island of Car-Nicobar in 1857, the following relation subsisted between the number of cocoanuts delivered and the wares bartered for them:—

For	1 cutlass (worth about 1½ dollars)	300	ripe cocoanuts.
„	1 knife-blade	100	„ „
„	6 table-knife-blades	300	„ „
„	1 American clasp-knife	50	„ „
„	1 axe	300	„ „
„	1 musket	500	„ „
„	1 double-barrelled gun	2,500	„ „
„	1 large metal spoon	180	„ „
„	1 piece of silver wire 30 inches long (used as an ornament)	2,500	„ „
„	1 keg of rum	2,500	„ „
„	1 bottle of arrack	10	„ „
„	3 sticks of American, so called negro-head, tobacco	100	„ „
„	1 phial of castor oil	50	„ „
„	1 lamp	500	„ „
„	1 bag of rice	300	„ „
„	1 piece blue calico (about 4 to 5 yards)	100	„ „
„	1 handkerchief	100	„ „

Many natives who have come into contact with the captains of ships from time to time visiting these islands, possess certificates as to their character and honesty in the cocoanut trade. Some of the inhabitants, however, would doubtless be less eager to exhibit these documents, which are generally written in English, to future visitors, if they were cognizant of their frequently ludicrous and not always flattering contents. Almost every certificate concludes with the remark, in many respects characteristic, that "whoever wishes to keep on friendly terms with the natives, must not take liberties with their women, nor shoot their fowls and pigs in the jungle." These documents also contain various hints as to the best anchorages, the difficulties of landing on the coast in boats, and so on, as also catalogues of the favourite articles of barter and their corresponding values in cocoanuts, and are therefore in many ways extremely valuable helps to voyagers whom chance or commerce brings to these islands.

Among the necessaries of life, next in importance to the cocoa-palm, stands the plantain (*pandanus melori* or *odoratissimus*), one of the *pandanus* family, the fruit of which takes the place of rice and Indian corn, neither of which important cereals is produced on the islands, owing to the total neglect of agriculture by the natives. The bread-fruit tree (*podocarpus incisa*), the banana (*musa paradisiaca*), sugar-cane, the nutmeg tree (*myristica moschata*), cardamum (*elettaria cardamomum*), oranges and citrons, the areca-palm and the betel-vine grow and thrive on most of the islands: but the lazy natives in their domestic economy make no use of any of these useful plants except the two last.*

* Of tubers we only saw the yam (*dioscorea alata*) produced in any great quantity, and even this root seems to be grown by the natives rather as an article of barter with strangers than for their own consumption. Yet the *yucca* (*Jatropha manihot*), the sweet potato (*convolvulus batata*, the camote of the Spanish colonies,) and other American tubers would also thrive here as abundantly as in the hot and moist low grounds of the West coast of the New World.

The nut of the areca-palm *(areca catechu)* and the green leaf of the betel pepper-vine *(chavica betel)* are used by the Nicobarians as by most of the races of Eastern Asia, for the purpose of chewing, and have become articles of primary necessity. The wealth of the Nicobar forests in timber and ornamental woods is such that a complete exploration of them would be certain to yield the most favorable results. The number of plants collected by the botanists of the expedition amounted to 280 distinct species,* but the list of phanerogamous plants might easily be increased by one-half, if a thorough investigation of the Archipelago were made. Even this hasty sketch of the geographical position and natural qualities of this group of islands will suffice to explain the interest attaching to them, an interest which has not only for centuries attracted seafarers to the Nicobars, but has even on several occasions prompted foreign Governments to take possession of the group and to found settlements on some of the islands.

From the time of the landing of English ship-captains in the commencement of the 17th and 18th centuries, to the attempts at colonization made by the Jesuits in 1711, by the Moravian Brethren in 1766, and by the Danes in 1756 and 1848, no visit paid to the Nicobars has been historically and politically so interesting, especially for Austria, as that of the Austrian ship *Joseph und Theresia* in the year 1778, a visit which recalls to our minds the wise efforts of the Government of the great Empress, to found settlements and seats of trade in Asia and Africa, with a view to promote the commerce and industry of Austria.

Hitherto nothing more has been known of this remarkable, though comparatively resultless expedition, than what the worthy Nicolaus Fontana, who accompanied the expedition as surgeon, has narrated in his journal of the voyage, printed at Leipzig in 1782†. Through the kind intercession of His Imperial Highness the Archduke Ferdinand Maximilian with the Belgian Government, access has been obtained to some extremely valuable documents relating to this expedition, which have been preserved in the royal archives at Brussels, and which are now, for the first time in their full extent, made public in the following pages.

In the year 1774, a Dutchman named William Bolts, who had been previously in the service of the English East India Company, laid before the then Ambassador of the Empress of Austria at London, Count Belgiojoso, proposals for placing the Netherlands and Trieste in direct commercial connexion with Persia, the East Indies, China, and Africa, and thus supplying the Austrian ports with the most important products of India and China, without the expensive intervention of other countries.

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* In the Danish edition of Rink's work on the "Circumnavigation of the globe by the corvette *Galathea*," a catalogue is to be found of 98 genera and 260 species which were collected by the botanist of the *Galathea* on the Nicobar Islands.

† *Journal of the Voyage of the Imperial Ship* Joseph und Theresia *to the new Austrian Colonies in Asia and Africa, addressed by Nicolaus Fontana, late Ship's Surgeon, to Herr Brambilla, Surgeon to the Emperor, Protochyrurgus of the Army, &c. Translated from the Italian manuscript, by Joseph Eyerle*, 1782, *Leipzig, "in der Buchhandlung der Gelehrten."*

These proposals having been brought by the Ambassador to the notice of the Court and of the State-Chancellor, Prince Kaunitz, at Vienna, were favorably received by the Cabinet, and Bolts was summoned by the Empress to the capital, there to unfold his plans personally in detail. He arrived at Vienna in April 1775. On the 5th June of the same year the Empress nationalized him by a patent drawn up in her own hand, and granted him, for the foundation of a commercial company, a charter (*privilegium*) which contained, among others, the following favorable conditions* :—

The administration at Trieste was charged to make over to him the guns necessary for the armament of his ships (Art. 8); the Minister of War was to place at his disposal the required number of sailors and petty officers (Art. 9); and his ships were privileged to carry at stem and stern (*proa e puppa*) the Imperial ensign and broad pendant (Art. 13). Bolts was at the same time authorized to take possession, in the name of the Empress and her successors, of all territories, settlements and grounds which he might acquire from Indian Princes in favor of all subjects of the Empress disposed to carry on trade with India (Art. 14).

It was the wish of the Imperial Government that the first expedition should start from Trieste; but Bolts objected to it, because the state of his affairs required him to equip his ship in London, and take in part of his cargo there. He promised, however, to make every effort for the establishment of an agency at Trieste, and that, in any case, the second ship of his enterprise should leave Trieste in September 1776, and that all future departures should take place from the same port.

Bolts betook himself, with his extremely advantageous concessions, first to Amsterdam and then to London, without, however, effecting more in one place than in the other, in respect to the contemplated formation of a commercial company. In the Netherlands he met with more success. A certain Baron von Proli and two other merchants of Antwerp, Ritter von Borrekens and Herr Dominik Nagels, by a covenant, dated 28th September 1775, entered into partnership with him and Francis Ryan, whom he had also induced to join the enterprise. The partners bound themselves, according to the terms of the contract, to furnish a capital of 900,000 guldens, for the fitting out and despatch, to the East Indies and China, of two trading vessels. In this amount was included the sum of 360,000 guldens which, in accordance with the stipulations of the charter of the 5th June 1775, were, under the orders of the Empress Maria Theresia, to be delivered in goods from the State magazines, and for which Bolts himself stood security. At the same time it was resolved to open an office for the accounts of the company at Trieste. Bolts having received £25,000 sterling from his partners, betook himself to London, where he purchased a ship, which he named *Joseph und Theresia*, embarked a portion of his cargo, and set sail on the 4th March for

* This document is to be found printed in full in the pamphlet entitled "*Recueil des pièces authentiques relatives aux affaires de la ci-devant Société Impériale Asiatique de Trieste, gérée à Anvers, 4to,* 116 *pages,*" published by Bolts at Paris [? Brussels] in 1787.

Leghorn. At this port he was to ship the copper, iron, steel, and arms, which the Imperial Government had agreed to supply in consideration of a security of 180,000 guldens. Bolts, however, could only find security for the value of 58,560 guldens. Nevertheless, on the representations of Baron von Proli, and having regard to the fact that Bolts was a man of acknowledged honesty and untarnished character, the Empress was gracious enough to dispense with the deposit of the remainder of the security originally stipulated.

Before Bolts left Leghorn for the East Indies, the Empress further invested him with the rank of a Lieutenant Colonel in her service, and for the better attainment of his objects, transmitted to him, through the three branches of the Imperial Chancery three comprehensive powers. The first of these authorized Bolts to enter into such negotiations and conclude such agreements with the princes and rulers of India, as might seem calculated to promote the interests of Her Majesty's subjects engaged in commerce in those distant regions; further, to take possession of all territories, lands, and settlements which he might be in a position to acquire in this way; to appoint the number of persons necessary for the maintenance of such places; to administer to them the oath of allegiance, and to make all other dispositions which might appear to him to be needful towards the attainment of this important object.* The second document defined the use which he was to make of the Imperial flag in Europe as well as in other parts of the world, while the third of the above-mentioned powers referred to the swearing in of sailors, and to regulations for maintaining discipline among the crews.†

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* The original of this deed, now in the State archives of Belgium, runs literally as follows:—

"Maria Thérèse, etc. Notre fidèle sujet Guillaume Bolts Nous a très-humblement "représenté, que pendant le séjour qu'il fera aux Indes, il pourra être dans le cas de négo- "cier avec les Princes de ces contrées des concessions de comptoirs ou de territoires et des "privilèges au profit de Nos états et de ceux entre Nos sujets, qui entreprendront dans la "suite le commerce des Indes; que dans cette vue il désirerait d'être autorisé à traiter "avec ces Souverains, tant pour arrêter avec eux des arrangements utiles au commerce, que "pour recevoir en Notre nom les terrains et habitations dont il s'agit et pour pourvoir à "leur conservation: Nous, approuvant les vues qui ont inspiré au dit Guillaume Bolts ces "demandes, l'autorisons, par les présentes, d'entamer et conclure avec ces Princes et "Souverains des Indes des traités et capitulations propres à avancer le commerce de Nos "sujets dans ces contrées éloignées; de prendre possession de telles concessions, territoires on "habitations qu'il pourra se ménager de leur part; d'engager le nombre de personnes "nécessaires pour la conservation de ces endroits et le maintien du bon ordre et de la police; "de leur administrer en Notre nom le serment de fidélité, et de faire telles autres disposi- "tions qui lui paraîtront convenables pour remplir ce but important: Voulons, que tout ce "qu'il aura arrêté, arrangé ou prescrit à ce sujet, ait et sortisse son plein et effet vigueur, "comme s'il avait été fait par Nous-même; et cela jusqu'à ce que sur le compte qu'il Nous "rendra de ses opérations, Nons ayons fait connaître là-dessus Nos intentions.

"Donné à Vienne le 27 Mars 1776."

† "I have in such a manner prepared these documents," wrote Prince Kaunitz in a report to the Empress, dated 20 March 1776, "as to carry out your Majesty's views in regard to the establishment of commercial relations between Austria and India, without at the same time exposing ourselves to any unpleasantness which might arise from the concession of indefinite and unlimited powers."

Bolts also received from the Austrian-Bohemian Chancery (*Grande Chancellerie d'Autriche et de Bohème*) various letters of navigation (*lettres de mer*), and a so-called *scontrino** for the Barbary States; while the Empress in addition provided the bold leader of the enterprise with letters of recommendation, signed with her own hand, to the Emperor of China, the King of Persia, and the Indian Princes whose states he might possibly visit.

Other letters, bearing the signature of the Chancellor Prince Kaunitz, were placed in his hands for the lesser princes and governors of those countries. Baron von Proli had gone to Vienna, in order to promote, at the Imperial Court the enterprise in which he was so materially interested. From Vienna he proceeded to Leghorn, to be present at the departure of the first ship. At the latter place, on the 6th July 1776, he concluded a fresh engagement with Bolts, by virtue of which he pledged himself to despatch to India in each of the years 1777, 1778 and 1779 one ship with a cargo worth at least £30,000 sterling, while Bolts on his part undertook to remain in India for three years and a half, reckoning from the day of his arrival, and there establish factories for the sale of the goods forwarded thither. As a reward both for the services he had already rendered and for those which he was to render in establishing at Trieste and Bruges commercial offices for the purpose of animating the transmarine trade of the Austrian and Belgian provinces, and opening new communications with the East, Baron von Proli was raised by Maria Theresia to the rank of Austrian Count.

The Ship *Joseph und Theresia*, destined for the East coast of Africa, the coasts of Malabar, Coromandel, and Bengal, sailed in September 1766 from Leghorn with a crew of 155 men. Contrary winds compelled Bolts to touch the Brazilian coast and take in fresh provisions at Rio de Janeiro. Thence he made for Delagoa on the Sacramento River,† opposite the Island of Madagascar, where he had the misfortune, on 20th March 1777, to suffer shipwreck, and to lose a portion of his crew. Bolts however employed his involuntary detention on this coast to found a factory. From two African Kings Mohaar Capell and Chibauraan Matola, as also from the Chief Bileme Masoumo, who paid tribute to the latter King, he purchased a number of pieces of ground, and concluded treaties of commerce and friendship with the two Kings, while in the name of the Emperor and Empress he received the oath of allegiance from Prince Bileme Masoumo. Both the deeds of sale and the treaties, which bear the respective dates of 5th and 7th May 1777, were prepared in duplicate. One copy was sent by Bolts to Prince Kaunitz at Vienna, in a despatch from Goa, dated 28th October 1777, the other copy he retained himself.

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* A piece of parchment cut zigzag fashion out of a book, which was formerly used by seamen when trading with the Barbary States, in order that captains of privateers, if they could not read, might be able to decide to what nation a vessel belonged by comparing the counterfoils in their possession with the cut out leaves (*scontrino*), one of which was given to merchantmen.

† Latitude 25°—28° N.

In the collection of documents published by Bolts in 1787 at Brussels, the expenses involved in the settlement at Delagoa are thus set forth :—

	Florins.
Cost of the first settlement and purchase of ground on both banks of the River Masoumo	12,156
The Snow* *Ottino*, used as a floating factory on the River Masoumo, inclusive of her cargo	19,125
Two vessels for the ivory trade between Delagoa and the coast of Malabar ; *viz* :—	
The "Kêche" *Count Proli* (including cargo)	48,695
The "Kêche" *Ferdinando*	46,291
TOTAL	126,267

In order protect the infant factory, Bolts erected two forts, to which he gave the names of St. Joseph and St. Theresia, and which he mounted with guns. From Delagoa he set sail for Surat, where he arrived on the 4th September 1777. Thence he proceeded to Bombay, and afterwards to Goa. The royal archives at Brussels contain several letters written by Bolts from Bombay, under date the 20th March, and from Goa, dated the 13th April 1778. In a letter of the latter date, addressed to Mr. Pietro Proli, the death at Madras of the partner Ryan is announced, and a list is given of some 34 letters and documents, copies of which were at the same time forwarded to Europe.†

During his stay at Goa, Bolts, on the 15th of April 1778, received from the Governor of the place the concession of special privileges in favor of subjects of the Empress and Austrian ships purposing to trade at the port of Daman between Surat and Bombay.

On reaching the Malabar Coast, Bolts purchased from Nawab Hyder Ali Khan, as factory-sites, several pieces of ground in the neighbourhood of Mangalore, Carwar, and Balliapatam, in the centre of the pepper districts. The cost of these establishments amounted to‡ :—

	Fl.	Kr.
Purchase of ground, erection of buildings and magazines	27,474	12
A sloop for communication with Mangalore	600	0
TOTAL	28,074	12

No further details are traceable as to the agreement concluded by Bolts with Hyder Ali in regard to the disposal of the above-mentioned plots of ground, except indeed the remark§ that no guns were to be used in the factories, nor were the dwellings and magazines to assume the appearance of forts.

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* A small, sharp-bowed, two-masted craft.

† In this letter Bolts observes among other things—"J'essuie toute sorte d'empêchements et de tracasseries de la part de l'Anglais . . . . Ils ont écrit à tous leurs gouvernements d'Asie, non seulement pour s'opposer de toutes leurs forces à notre entreprise, mais sous des peines rigoureuses, ils défendent à tous leurs serviteurs d'avoir aucune communication avec notre expédition."

‡ *Compare*, 'Recueil des pièces authentiques relatives aux affaires de la ci-devant Société Impériale Asiatique de Trieste, gérée à Anvers,' Bruxelles, 1787, p. 78.

§ 'Recueil, &c.,' p. 107.

In a letter written by Bolts from Bombay, on 12th March 1779, to one of his partners, he expresses his determination to proceed with a cargo of cotton and pepper to the Coromandel Coast and Bengal; he would then again visit the coast of Bengal with the Ship *Joseph und Theresia* and a second craft which he intended to purchase, and afterwards to sail direct from the factory at Carwar for Europe. In another letter written from Madras, under date 1st July 1779, by First Lieutenant Van Nüssel, it is said "we intend to set sail from this for Bengal on the 10th July, thence we shall return once more to the Coromandel Coast, to take in the rest of our cargo, which consists of pepper, after which we shall proceed to Europe."

The Nicobar Islands had already been occupied a year before (April 1778) by Bolts, or rather by the Captain of the *Joseph und Theresia*, named Bennett, who had founded a factory there. This is apparent from a passage in the before-mentioned journal of Surgeon Fontana, wherein it is said: "It was not till the 20th March 1778 that we left the Malabar Coast to continue our voyage to the Isles of Nicobar, situated in the Bay of Bengal near the northern part of Sumatra, between 8° and 9° N. Lat. We remained there from 1st April till 4th September 1778, and during this interval, with the consent of the natives, took possession, in the name of His Majesty the Emperor Joseph II, of the Islands of Nancoveri (Nancowry), Souri (Chowry or Car-Nicobar), Tricutte (Trinkuttee), and Catchiout (Katchall)."

The records preserved at Vienna and Brussels contain no further details as to this enterprise. On the other hand, in the frequently-quoted *Recueil* (page 78) a brief memorandum may be found of the expense incurred in establishing this colony.

	Fl.	Kr.
Cost of the first settlement, dwelling houses, &c.	36,969	48
A *goelette* for the use of the colony	850	0
The Snow *Borrekens* for communication with Madras and Pegu, in order to keep the Colony supplied with means of subsistence ...	10,440	0
TOTAL ...	48,259	48

In 1781 Bolts returned to Europe; on the 27th April he anchored off Cadiz, and reached in the following month Leghorn, the destination of his voyage.

The final results of this expedition were not favorable to the firm of Bolts, Proli, and Co.; the losses more than counterbalanced the receipts, and the Company found itself unable to meet its engagements. Proli and his partners at Antwerp had been endeavouring to obtain a special commercial charter in order to be independent of Bolts.*

* The failure of the undertaking seems to have been less due to rash speculations than to Count Proli's jealousy of Bolts. Although the several factories on the Coasts of Coromandel and Malabar had begun to yield profits, yet, in accordance with a proposal which Proli, on the 2nd May 1782, laid before Count Coblenz, they were given up, in order to found others at Canton.

Compare 'Memorie politico-economiche, della città e territorio di Trieste, della penisola Istria e della Dalmazia, di G. de B—n. (Giuseppe Brodmann). Venezia 1821, Tipografia di Alvisopoli'; also 'Del Commercio e dell' industria, ecc.', di F. E. J. Barraux. Venezia 1828, Tipografia Picotti.

Bolts, however, repaired to the Netherlands, where the Emperor Joseph II then was, and when he had made himself acquainted with that monarch's intentions, he signed, on the 9th August 1781, at Antwerp, a third agreement with Proli, Borrekens, and Nagels. The main object of this agreement was the formation of a new company, with a capital of two million guldens, to which Bolts promised to cede his *privilegium* of the 5th June 1775.

In a special deed, dated Vienna the 6th October 1781, the Emperor Joseph II approved and confirmed this agreement, and authorized the partners in the enterprise to raise a sum of two million guldens in the way of a loan, in shares of 2,000 guldens, which were to be negotiable like Government securities. "We are further pleased," says the Emperor, "to suspend for the present our claim against Herr Bolts, for the articles delivered to him by our military and financial departments, as cargo for the Ship *Joseph und Theresia*, provided that we shall not be held responsible for any indemnification for the acquisition, occupation, or restoration of factories, or for any other outlay whatever, which Herr Bolts or his partners, in the interest of their business, may have made or may hereafter think fit to make. On the other hand, we reserve to ourselves the right of purchasing from the company, after the expiration of the charter, those possessions the acquisition of which may appear desirable in the interests of our subjects." Bolts, putting his own interpretation on that clause in the patent of 27th March 1776, which authorized him to take possession of territories acquired in India, and to employ the number of persons necessary for the occupation of such places, and the maintenance of public order, had in 1779 drawn bills on the Empress' account upon the firm of Proli and Co., to meet the expenses involved in keeping up the factories erected in the territories acquired. This proceeding was thought very strange at the Court of Vienna, and Prince Kaunitz, in a letter dated 30th September 1779, informed Count von Proli that Bolts' demands were not admissible.* The clause in the charter of 6th October 1781 was accordingly intended to prevent further claims being made by the chief of the enterprise.

The new company constituted at Antwerp by the agreement of 27th August 1781 (*Société Impériale Asiatique de Trieste*), the Directors of which were, as before, Messrs. Bolts, Proli, Borrekens and Nagels, began its operations under favorable auspices; but a series of adverse occurrences, and the conclusion of peace between France, England, and Holland, at a moment when it was least expected, again brought ruin upon the undertaking in the course of a few years. In 1785, the company declared itself insolvent. Bolts, who was then in Paris, received there proposals for the cession or sale of the factories founded on the Malabar Coast, and laid them before Prince Kaunitz. The Chancellor replied thereto on 5th April 1786: "as regards the establishments and factories which you have founded in India, apart from the general

* "L'objet du plein-pouvoir du 27 Mars 1776," writes Kaunitz, "n'a jamais pu être que de donner du poids aux démarches de Bolts, et d'assurer à S. M. la souveraineté des établissements futurs; mais selon toute interprétation et usage reçus, les frais doivent être supportés par ceux qui en acquièrent la propriété."

advantages which the subjects of Her Majesty and His Royal Highness the Grand Duke may be able to derive from them, they cannot in any case be disposed of, so long as the affairs of the insolvent company are not finally wound up. Hence you can yourself draw the conclusion that you have no option but to decline the offers made to you in this matter."

Bolts died at Paris, in great poverty, on 28th April 1808.* Michaud, in his *Bibliographie Universelle*, devotes an article of some length to this more enterprising than clear-sighted man.

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Most of the settlements hitherto made on the Nicobars have gone to wreck from want of care in the selection and arrangement of the site chosen for colonization, and from want of capital. The Missionaries who made these islands the focus of their evangelizing efforts were never housed and fed,—the *first* condition of health in such hostile climates. Spade in hand, often while actually fever-stricken, they were compelled, in order to secure the means of support, to till the ground in the most oppressive heat; or else they gathered shells on the shore, and hunted for birds and reptiles in the swampy virgin forest, to procure the means of further subsistence by the sale of their collections in Europe.†

Nor were the attempts of colonisation made by the *Danes followed by* better results. Undertaken and prosecuted as they were with insufficient means, they could but hold the position of a passing phenomenon, and did at most contribute some gains to science. Still, notwithstanding various unsuccessful attempts, the interest taken in the Nicobars did not abate, and on the 25th January 1846, Captain Steen Bille, commanding the Danish Corvette *Galathea*, solemnly took possession of the Nicobar group in the name of the King of Denmark. Two natives, Luha and Angre, father and son, the former an inhabitant of the village of Malacca, the latter of the village of Enuang on the Island of Nancowry, were, on this occasion, installed as petty chiefs, and

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* Bolts had several times essayed authorship. In 1771, he published at London two quarto volumes in English, entitled *Considerations on Indian Affairs*. It was also translated into French. As already remarked his '*Recueil des piéces authentiques, &c.*,' appeared at Brussels in 1787.

† Reverend J. G. Haensel, one of the Moravian Brethren, who spent from 1779 to 1787 on the Nicobars amid the greatest privations, and by whom an extremely interesting account of the group has been published, writes in his kindly simple way (page 36)—"I had the satisfaction to perceive the blessing of God resting upon these exertions, by which a considerable part of the expenses of the mission was defrayed, there having been at the time a great demand for productions of this kind in England, Holland, Denmark, and other parts of Europe." And in another place (page 23), he writes: "Our external situation became more and more irksome, and we could scarcely procure the means of subsistence. My health had suffered so much from continual sickness, anxiety, and hard labor, that I was apparently fast approaching my end. I had running sores in my legs, and a total obstruction with tormenting pains in my bowels, and expected that mortification would soon take place and put an end to my misery." See 'Letters on the Nicobar Islands, their natural productions, and the manners &c., of the natives,' addressed by Rev. J. G. Haensel (the only surviving Missionary) to Reverend C. J. Latrobe, London, 1812.

each invested with a staff bearing the name of "Christian VIII.' The duties prescribed them, as detailed in a document drawn up in Danish and English, consisted, however, principally in hoisting the Danish flag on the arrival or departure of foreign ships into or from the harbour of Nancowry.*

But on the death of King Christian VIII, the Danish Government, considering the course of political events at the time, was disinclined to take *de facto* possession of the Nicobars by a permanent settlement; and at the commencement of the year 1848, a Danish man-of-war, the Royal Corvette *Valkyrien*, was again sent to the Archipelago, this time with the object of removing the Danish flags and staves which had been left on the islands.†

The claim of the Danes to possession of the Nicobars was thus *de facto* abandoned. Since then, indeed, according to *Thornton's Gazetteer of India*, several petty chiefs of Car-Nicobar, the most northern island of the group, are said to have hoisted the English flag, and to have conveyed to the British Government, through English merchants settled at Moulmein, the expression of their wish to place themselves under the protection of the British Crown.

This intelligence, so far as it relates to the conduct of the native chiefs, seems to be not altogether exact. The truth is, that the inhabitants will hoist any flag that is given them, because they like to imitate Europeans, and fancy themselves thereby protected against the claims of other nations. But there is nothing they really dread more than an actual seizure of their islands, and on the appearance of a ship of war

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* As a proof with how little energy and practical tact even the Danes went to work in their various attempts at colonization on the Nicobars, the following remarks of Mr. Topping, an English Officer in the service of the East India Company, may here be quoted. Topping visited the Nicobars in October 1790, in the Cutter *Mary*, and met some of the settlers in the harbour of Nancowry. "Went on shore to the establishments, but found no European there to support, with due parade, the King of Denmark's presumptive authority in the island. A country-born Dutch-descended Sergeant was commandant of the place, and had with him two mulatto soldiers, two sepoys, one artilleryman, and two caffre slaves—all, excepting the Negroes, in His Danish Majesty's pay. The whole duty required of them seemed to be to hoist a swallow-tailed Danish flag upon a bamboo pole; to take charge of three or four old ill-mounted, unserviceable iron guns and a few rounds of powder and ball, given them for the defence of the settlement! and (the most difficult task of all) to preserve themselves from the pressing attacks of hunger and disease. Their habitation, a truly wretched one, was half eaten up by white-ants. It has at first only a thatched roof to cover it, which being out of repair, afforded them scarcely any shelter against the heavy and almost continual rains that vex these desolate regions. The poor people complained bitterly of their condition, and in particular of their being left like banished criminals with a bare subsistence, unconsoled by any of those little additional comforts and indulgences so dreary and unhealthy a situation entitles them to, and indeed gave us no great reason, either by their language or appearance, to think very highly of the bounty or humanity of the Governor General at Tranquebar, who, to say the truth, seems to have no other end in keeping possession of this post than to exercise their exclusive right of dominion there in imitation of the surly and too common example of the cur in the fable."—*Journal of a Voyage in the Bay of Bengal, &c.*, published in 'Selections from the Records of the Madras Government,' 1855, No. XIX, pp. 31-35.

† 'Hamburger Correspondent' of 30th April 1848. 'India Political Despatches' of 1st February 1848. *Friend of India* for 1853, p. 455.

they are always in extreme trepidation lest they should be deprived at once of their freedom and their cocoanuts.* It is far more probable that English ship captains who trade with these islands, with a view to the greater security of a traffic so profitable as that in cocoanuts, have made representations to the East India officials, and attempted to bring about the occupation of this important group in the same way as the Andamans have been recently annexed, before any other European power can take possession of it.†

Thus, as far as the climate or the claims of other Governments are concerned, there appears to exist no reason why the flag of Austria should not again float, and that permanently, on these shores, where it was once unfurled 85 years ago.

Only a few days voyage from Madras, Moulmein, and Calcutta, lying between Ceylon on the one hand, and the Malay Peninsula on the other, almost at the mouth of the Straits of Malacca, and within reach of easy intercourse with the large groups of islands of the Chinese and Japanese Seas, the Nicobar Islands offer sufficient points of attraction for a maritime and commercial power to make it worth while to attempt their occupation. But if the attempt at colonization is again to be made, neither money nor men must be spared. The cost of the first clearance and cultivation, if a favorable result is to be expected, cannot be calculated at less than 1,000,000 to 1,500,000 florins.‡ The number of Malay and Indian laborers to be employed under European s upervision in the gradual clearance of forest, embankment of streams, drainage of swamps, and cultivation of the soil, would amount to at least 400 or 500.

At the same time it would not be right to regard the sums spent in the first foundation of a colony as altogether lost; for the great fertility of the soil, which is suited to the production of the most important tropi-

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* A saying prevails among the natives, spread probably by cunning and self-interested chiefs, that if ever a European should settle among them, all the cocoanuts will at once drop from the trees, and that they will thus be deprived for ever of their most important means of subsistence.

† That England has not yet taken possession of the Nicobars, in spite of their important and favourable position, is chiefly, no doubt, due to the fact that the British Government already holds the most flourishing settlements in the immediate neighbourhood. Penang, Singapore and Malacca, only 380 to 400 English miles distant on one side, and the Island of Ceylon on the other, completely fulfil all maritime, commercial, and strategical demands.

‡ The Commander of the expedition, Commodore B. von Wüllerstorf, in a memorandum on the occupation of the Nicobars, calculated the cost of such a settlement for the first year as follows :—

	Florins.
Fitting out of ships and transports	600,000
Tools, machinery, &c.	150,000
Extraordinary labor	200,000
Purchase of ground from the natives in coin or by barter, and cost of imported articles of food	100,000
Unforeseen expenses	100,000
TOTAL ...	1,150,000

cal products, (*e.g.*, sugar, coffee, cocoa, cotton, indigo, spices, tobacco, &c.)* would, under the influence of cultivation and industry, speedily develop numerous sources of profit. On those islands where the cocoa-palm prevails in abundance, factories might at once be established on the spot for the manufacture of oil and soap from the flesh of the cocoanut, and for the production of cables, cordage, and matting from the fibre, while in places where the planting of sugar-cane promises good results, sugar boileries, &c., might be set up. The cultivation of rice, tobacco, and grass for fodder, and the extension of the yam and banana plantations should also at once be taken in hand.

The places best fitted for projects of settlement and cultivation are, Car-Nicobar, the most northern island, and nearest to the Andaman group, and the fertile sandstone and clay slate soil of the Islands of Pulo-Milo, Condul, and the Great and Little Nicobar, in the southern group.

All these islands are rich in excellent building material, while the plastic clays of the northern islands are as well suited for bricks and tiles as for pottery; the sandstones of the southern islands yield excellent masonry materials; moreover lime is everywhere to be procured in inexhaustible quantities from the natural agency of the coral insects.

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* Looking to the great similarity, not to say identity, between the climate, soil, and flora of the Nicobars, and of the neighbouring islands and continents, I may be allowed here to refer to an extremely comprehensive work by an Austrian naturalist, the learned Dr. J. Helfer 'On the Tenasserim Provinces, the Mergui Archipelago, and the Andaman Islands,' a work which would offer many valuable hints for the colonization of the Nicobar group. This comprehensive memoir is to be found in the Contributions of the Imperial Geographical Society of Vienna, vol. III, 1859, part 3, pp. 167-390.

Contributions to the Geology and Physical Geography of the Nicober Islands.—By Dr. F. von Hochstetter, *(translated by* Dr. F. Stoliczka *from the "Voyage of the Austrian Frigate* Novara *round the world in* 1857-59)."

The Nicobar Islands (pl. 1) belong to an area of elevation which can be traced from the Bay of Bengal far into the southern seas. Beginning under the 18th degree north latitude in the group of the Cheduba and Reguain Islands on the coast of Arracan, passing through the Andamans and Nicobars, then continuing through Java, Sumatra, and the south-western group of the Sunda Islands, this line of elevation bends in an oblique S-form through New Guinea, to the north of the Australian continent, and forms in New Ireland the Solomon Islands, New Hebrides and New Zealand, a curve, concave towards the west, the small group of the Macquarie Islands being possibly considered as the extreme southern end of this curve. Winding from the northern into the southern hemisphere through 70 degrees of latitude, this line, or area, is characterized as one of elevation by two phenomena, totally different in their nature, but nevertheless equally grand, and in certain respects related to each other. These phenomena are, *first*, the activity of the interior of the earth, showing itself in the volcanic action; and *secondly*, the activity of the coralline animals, disclosing itself in the formation of that kind of coral reefs which Darwin has distinguished from the barrier or lagoon reefs under the name of fringing or coast reefs.

Both phenomena,—the volcanic action with its elevatory power, and the formation of coast reefs, are, in certain respects, related to each other, as has been placed beyond a doubt by Darwin's observations, although both do not appear together along all parts of this area. In the southern extra-tropical latitudes, where coralline life does not exist on that large scale, the volcanic action is the only marked one, and equally so in tropical latitudes to the north of the equator,—where that action is locally wanting,—the peculiar formation of coral reefs must be considered as the principal argument for the continuation of this line of elevation. This is the case at the Nicobar Islands.

These islands occupy a gap without volcanoes, between the volcanic range of Sumatra and the Barren and Narcondam Islands, which lie to the east of the Andamans.

Whatever may be hidden in the interior of the Nicobar Islands, covered with perfectly impenetrable primeval forests and grassy plains, the occurrence of more recent volcanic rocks is the least probable. Although I have found on the north side of Car-Nicobar, the northernmost of the island, two pieces of a porous basaltic rock, the size of a man's hand, in a coarse gravel in the forest near the village Mous, and a larger angular fragment in the coral sand on the strand near the village Saui, still there is more reason to believe that these fragments were transported to the coast of Car-Nicobar in the roots of

stranded trees,* or even that they were remains from the travelling bags of the Danish naturalists of the Corvette *Galathea*,—who, in 1846, shortly before they landed on Car-Nicobar, visited the volcanic Barren island,—than that they came from the interior of the island. I have in vain searched for similar pieces in the stream and river gravels of Car-Nicobar, and I have not met with them on any of the other islands on which we landed.

On the other hand, the Nicobar Islands are distinctly characterized as a portion of the chain of oceanic elevations, which began in former geological periods, and still continues, by the upheaved coral banks and by the continuous formation of coral reefs, which slowly, but in the course of hundreds and thousands of years perceptibly, enlarge the territory of the islands.

The Austral-Asiatic area of elevation, above indicated in its entire extent, has in the Nicobars a mean direction to N. 20° W. or from S. S. E. to N. N. W., possessing a length of 148 English (=37 German geographical) miles, and a width of 16 English (=4 geographical) miles. This direction indicates at the same time the strike of the strata on all the islands, while the dip is either towards east or west. The synclinals and anticlinals in the geological structure of the islands are thus coincident with the direction of the great geological line of elevation which connects the northern point of Sumatra with the group of the Andaman Islands.

The total area of all the islands is calculated to be 33 to 34 German (geographical) square miles (equal to about 528—544 English.)

I.—GEOGRAPHICAL FORMATIONS.

To render properly intelligible the results which will be given in the following pages, I may be permitted to make a few preliminary remarks.

It is at present extremely difficult to make any detailed geological observations on the Nicobar Islands. One is limited to the sea coast, as impenetrable forests and grassy plains make the interior of the islands perfectly inaccessible and hide the rocks. On the northern smaller islands, this circumstance is of less importance, because the extent of the rocks through a whole island can easily be ascertained, as soon as it is possible to observe them on two opposite sides of the coast in the same stratigraphical relation. The case is different with the southern larger islands. Sambillang or Great Nicobar has an area of 17½ geographical square miles, and is larger than all the other islands put together; it offers in the mountain ranges (rising up to 2,000 feet),

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* Chamisso mentions the transport of stones in the roots of stranded trees on the Radek group, and Darwin gives a similar example from the Kieling Islands. ("Darwin's Natural History Travels," part, II, p. 242).

and deep valleys, such a variety in the configuration of the ground, that it is impossible to suppose that what is to be seen on one or the other point at the coast should be characteristic for the whole island. The mouths of rivers being generally occupied by mangrove swamps, it is even impossible to come to any conclusions from gravels as to the rock which is to be found in the interior. But even on the coast there are great obstacles to geological investigation. Wherever the inquiring eye of the geologist observes promising cliffs, there breakers make it generally impossible to land, and where landing can be effected, we usually meet only a flat coast.

Thus one is limited in one's observations to the few points where, during low water, it becomes practicable to reach from the sandy shore some rocky promontory; and even under the best circumstances, I was always restricted to that part of the coast on which the frigate anchored, for no amount of promises and offers could induce the natives to undertake longer trips with their canoes, neither was it possible to have a boat from the frigate placed at my disposal. I hope that other geologists, who may in future visit these islands, will be more successful in this respect.

My observations were therefore confined to the following places:—

1.—*North-western coast of Car-Nicobar.*—A low precipitous coast accessible along its entire extent. Thick clay beds, with some more solid strata of sandstone, containing *Fucoids*, are on this coast overlaid by upheaved coral banks (coral conglomerate and coral sandstone); these are in some places still in direct communication with living coast reefs.

2.—*Southern Bay of Car-Nicobar.*—Flat coral ground with fringing reefs, and at the breakers banks of a recent sandstone.

3.—*Novara Bay on the west coast of Tillangchong.*—Precipitously rising cliffs of serpentine and gabbro conglomerate at the breakers coast reefs.

4.—*Channel between Carmorta and Nancowry, or Nancowry Harbour.*—A deep transverse cleft through yellow clay-marls, containing magnesia, alternating with beds of serpentine and gabbro traps, and pierced through by serpentine and gabbro. A long stretching coral reef formation exists in the channel, but coral ground is very limited.

5.—The small islands *Trice* and *Track* north of *Little Nicobar*; precipitously upheaved; clayey sandstone beds with imbedded pieces of bituminous brown-coal; coral and conglomerate banks and fringing reefs.

6.—*Pulo Milu.*—A small island on the north side of Little Nicobar, consisting of strongly raised sandstone beds, with flat coral ground, fresh water alluvium, and fringing reefs round the whole island.

7.—Island of *Kondul* on the north side of *Great Nicobar*.—Sandstone, sandy slates, and beds of clay-marl alternating with each other, flat coral ground of very limited extent, fresh water alluvium, and fringing reefs.

8.—*A small bay on the northern coast of Great Nicobar*.—Sandstone hills, salt and brackish water swamps.

9.—*East side of the southern bay* (Galathea Bay) *of Great Nicobar*, into which flows the Galathea river; sandstone mountains; flat coral ground, coral and conglomerate formation at the level of the breakers, fringing reefs; pebbles of bituminous coal on the strand.

These places are, with the exception of Car-Nicobar, the same as were seen by the Danish geologist Dr. Rink, accompanying the expedition of the Danish Corvette *Galathea* in 1846, and were,—besides many others in the Archipelago, visited by him during a stay of four months,—described in a special work.*

As to scientific inquiry, I left the Nicobars quite unsatisfied in spite of the comparatively long time of one month which we spent in their waters. I know how little my own observations increase the geological knowledge of the islands, for which we are indebted to Dr. Rink: for just the grandest objects, the Islands *Terressa*, *Little* and *Great Nicobar*, remained for me altogether a *terra incognita*. But I am conscious of having done everything that it was possible to do under the circumstances, and in this point of view the few observations I can offer must be criticised.

Car-Nicobar is a low island, the average height of which above the level of the sea amounts to about 45 feet; only two ridges, which may be from 180 to 200 feet high, rise in the interior above the forest which covers nearly the whole island. The west, south, and east, coasts are flat and sandy, and the N. W. and S. E. monsoons accumulate gradually higher and higher upon them fragments of corals and shells, which pass over the fringing reefs surrounding the whole island. The south coast is in part swampy, only the northern, or rather the north-western, coast, forming the shore of the bay of Saui, is precipitous, allowing a view of the geological structure of the island; the section of this coast is given in the sketch pl. 2, fig. 1—*Eastern shore of the Bay of Saui*. 1—Loose coral and shell-sand: 2—dead coral banks: 3—indurated rock-beds of dead corals and shell-sand: 4—plastic-clay with bands of sandstone.

The eastern shore of the bay gradually rises from north to south up to a height of about 60 feet, and includes two small lateral bays in which massive banks of a grey clay crop out below upheaved

* Die Nikobarischen Inseln, eine geographische Skizze, mit specieller Berücksiehtigung der Geognosie, Kopenhagen, 1847. (The Nicobar Islands, a geographical sketch with special reference to geology).

coral banks which form the projecting corners of the cliff. It is very characteristic that the boundary of calcareous and clay strata on the surface of the coast terrace is at the same time a sharp limit of vegetation, inasmuch as on the clayey ground the *cocoa-palm* is replaced by *pandanus*, *casuarina* and grass, forming locally quite extensive grassy plains. The clay deposits, without any distinct stratification, show a cubical cleavage. The prevailing color is light-grey, only single bands are darker colored, others are ferruginous, containing numerous clay-ironstone nodules. The clay is a little calcareous, effervescing with acids. In the southern lateral bay also appears between the clay beds a more solid stratum from two to three feet thick, and from its projecting part larger and smaller plates are broken off. On one of these plates I observed the impression of a large species of *Fucus* (*Chondrites Nicobarensis*, Hochst.) The strike of the strata is from S. S. E. to N. W. in both bays, the greatest thickness observable in the strata amounts to 20 or 30 feet. This clay deposit on the northern coast of Car-Nicobar is characterized as a marine formation by the numerous *Foraminifera* which it contains, but I did not succeed in finding any recognizable remains of *Mollusca*, except indistinct and badly preserved bivalves (*Pelecypoda*).*

Farther towards the south, the clay beds again sink under the level of the sea, and in their place again appear coral banks, the precipitous coast becoming constantly higher, but at the same time gradually more inaccessible. On this coast the sea has washed out deep hollows, and the coral-banks are overlaid by massive banks of a white rock consisting of shell and coral sand, and rather soft on the weathered surface. On the Areca river, in the innermost corner of the bay of Saui, the plateau of about 60 feet rapidly terminates with a fault, and the southern shore of the bay only exhibits a flat sandy strand richly overgrown with cocoanut trees, being at the same time thickly populated. Judging from a few lumps in the gravel which I found on the northern as well as on the southern side, I conclude that there is somewhere in the interior of the island a grey fine-grained sandstone with little flakes of white mica and also compact limestone *in situ*. The natives use the sandstone from the gravels for grindstones.

Batty Malve is a small rocky island with precipitous shores all round. It rises on the south-eastern and eastern side in two terraces to about 150 feet. On the western and north-western side it runs into a low flat cliff; judging from a distance of two or three nautical miles—we did not come nearer—the island is inaccessible. The extreme shore seemed to be covered with grass only, the interior was a low jungle, the crown of cocoa-palm being here and there visible at its margin. Only opposite Car-Nicobar can the island give an

* The description of the very well preserved *Foraminifera* from the above described clayey beds was undertaken by Dr. K. Schwager. His very valuable paper will be appended to this chapter of the Nicobar Islands, and for farther results I here refer to this paper.

impression of a "relatively bare rock," as Steen Bille* says. The rocks to be found on the island are most probably the same as those of Car-Nicobar.

Tillangchong, situated opposite Car-Nicobar, is a narrow mountainous island with precipitous cliffs, stretching from N. W. towards S. E.; it consists of two rugged mountain ranges separated by a depression of only 30 feet in depth. Where, on the S. E. both ranges meet, a deep bay is formed, which, during the N. W. monsoon, offers an excellent place for anchorage. The less precipitous south-western coast is accompanied by a few rocky cliffs, while the north-eastern coast is highly precipitous all along the shore. The highest hills are situated in the northern part of the island, apparently rising to an elevation of about 500 feet. Serpentine and gabbro form no doubt the great mass of the island.—pl. 2, fig. 2.—*South-east coast of Tillanchong*. 1—coral-rocks: 2—serpentine and gabbro: 3—breccia; 4—sharply elevated rock-beds.

In the small bay on the south-western coast, Novara Bay, in which the frigate was lying at anchor for a few hours, the irregular and cliff-like shores are composed of common serpentine, often traversed with veins of hornstone, and the same is the case with the thickly wooded mountain slopes, as far as could be observed in the small rocky beds of streams. The shore exhibited a very great variety in the color of the serpentine, jasper and hornstone pebbles: besides these, however, there were noticed numerous pebbles of a dark green diallage rock, which must no doubt be *in situ* somewhere on the same coast at no great distance.

From the angular fragments of serpentine and other masses in the course of decomposition, a ferruginous breccia is formed at the foot of the hills, while in the breakers the serpentine gravels are being cemented by coral and shelly sand forming solid sandstone and conglomerate banks which recall the Verde-antique, (Ophicalcite). The plateau of the coast reefs extends 200 to 300 feet from the precipitous shore into the sea. The whole of the island was covered with thick primeval forest which thrives well, even on the serpentine ground.

In passing along there were observed on the southern part of the island and on the eastern coast thin-bedded rocks with a high dip; these were in massive cliffs almost perpendicular in the south-eastern bay with a columnar structure; their true nature remained, however, unknown to me, for I was unfortunately obliged to use the telescope in place of the geological hammer.

Carmorta, Trinkut, Nancowry with *Katchall* form the middle group of the Nicobar Islands. Trinkut is situated in front of the eastern entrance of a channel between Carmorta and Nancowry; it is a low

* Captain Steen Bille was Commander of the Danish Ship *Galathea*.

island surrounded by coral reefs, and on its southern coast whitish-yellow argillaceous marls crop out. *Carmorta* and *Nancowry* exhibit a greater variety of formation,—pl. 2, fig. 3.—*Sections of Carmorta and Trinkut.* 1—gabbro and serpentine: 2—breccia and tufa: 3—clay marl with sandy beds: 4—coral-rocks. The channel between the two islands, Nancowry Harbour, has numerous small bays, and corresponds with a transverse cleft, while the Trinkut channel is a longitudinal cleft. The precipitous shores of the former offer, therefore, the most instructive geological section.

The narrow western entrance to the Nancowry channel is marked by two projecting rocks, which have been washed out by the force of the waves, making thus a natural gateway of rocks. Both cliffs rising almost perpendicularly to about 80 feet, are formed of a coarse breccia, composed of angular fragments of serpentine and gabbro* firmly cemented. I could not observe any stratification in this rock on the Carmorta side; it is here in cliffs with large quadrangular blocks. On the Nancowry side, however, coarser bands alternate with finer tufa-like ones, with a strike from S. S. E. to N. N. W., and dipping about 85 degrees towards the west. On the Carmorta side, there crop out at two places below heaps of masses of rocks, which Rink very properly regarded as friction-breccias, cliffs of a more or less serpentine or gabbro-like massive rock.

Among the pebbles on the strand, I also met with numerous fragments of a reddish-brown rock traversed by white calcite veins, the rock which Rink called eurite.

These phenomena, at the western entrance to Nancowry Harbour are thus perfectly identical with those which Rink has observed at the entrance of the Ulala Bay, situated only a few miles to the north; they are represented (l. c. p. 68) by Rink in a section. Further to the north the mostly bare hills on the west coast of Carmorta, recalling by their external shape conical volcanic forms, attain a height of from 400 to 500 feet; they no doubt indicate the further extension of the serpentine and gabbro rocks, which on Carmorta and Nancowry are traversed from S. S. E. to N. N. W. by a longitudinal cleft.

In the interior of Nancowry harbour, wherever the rocks are exposed on the projecting angles, they appear to be well-bedded, whitish-yellow, clayey marls, alternating with banks of a fine-grained sandstone, with serpentine and gabbro tufas.

Most instructive in this respect is the precipitous south-eastern corner of Carmorta, at which the coast line bends into the Trinkut channel. The argillaceous marl formation is here well exposed in cliffs of from 30 to 80 feet high. On the southern side of the corner the transverse section of the strata can be observed, dipping at 25° to 30° towards the west, while on the eastern side, parallel to the longitudinal break,

* Gabbro is a rock composed of diallage, smaragdite, or hypersthene with labradorite or saussurites, and often some other minerals in an irregular mixture.

the beds crop out horizontally one above the other. The argillaceous marl does not contain fossils, is of a yellowish white color, and on the perpendicular walls it was covered with inch-long, white, very thin, crystals of a silky lustre. The examination of these showed them to be sulphate of magnesia. The clay itself contains, according to Rink's analysis, besides silicate of alumina, iron-oxide and magnesia.

The whitish-yellow clay marls of Carmorta and Nancowry being entirely free from lime have become famous since Professor Ehrenberg (Berl. Akad. Monatsberichte 1850, p. 476), by an examination of the samples brought by Dr. Rink, has shown that they are true *Polycistina*-marls, like those of the Barbadoes. Ehrenberg discovered in 1848 about 300 species, which were by Professor Forbes believed to belong to miocene (tertiary) deposits. Ehrenberg says: "Especially well developed is this material on Carmorta, where, near Frederick's haven, a hill 300 feet high is covered all over with variegated *Polycistina*-clay, while the Mongkata hills on the eastern side of the island are, according to Rink, entirely composed of a whitish-clay resembling meerschaum; this is, according to my analysis, a nearly pure agglomerate of beautiful *Polycistina* and their fragments, beside numerous *Spongiolites.*"* The species of *Polycistina* on the Nicobars are, according to Ehrenberg, the same which compose the similar marl on the Barbadoes, situated in nearly the same latitude; but there are also some new forms.

Near the level of the sea the clay marls, which locally contain angular fragments of serpentine and gabbro, alternate with more solid strata of psephitic rock, which is composed of strongly-cemented angular fragments of serpentine and gabbro, and can therefore be best designated as gabbro-tufa. It is remarkable that this rock again includes larger and smaller pieces of the clay marl. On the eastern coast, near the village Inaka (Enaca) a reddish micaceous sandstone appears between the clay marls.

Similar are the geological conditions on the northern coast of Nancowry. Between the villages Inúang and Malacca, the whitish-yellow clay marls crop out in slightly inclined strata; between Malacca and Injáong, however, lies a precipitous cliff, on which these strata rise almost perpendicular, and are gradually replaced by an accumulation of fragments of serpentine and gabbro. At the projecting corner itself, the traveller faces a precipitous cliff of about 60 feet in height, but being cracked and decomposed, the true nature of the rock is recognised with difficulty. On a fresh fracture, however, one soon observes a massive diallage rock, the laminar diallage being clearly traceable in the nearly solid mass of felspar. Narrow veins of quartz pass through the rock.

From here up to the village Injáong the strand is again flatter, and nowhere nearer than on the other side of the village high, dark-

* The result of examination of a Nancowry specimen is figured on plate XXXVI of Ehrenberg's "Mikrogeologie."

colored, rocks are a second time visible, indicating a massive rock. These are the two places which Rink also has marked on his maps as plutonic rocks.

Trice and Track.—On the north-western point of the small Island of Trice, highly upheaved banks of a fine-grained argillaceous sandstone of a greenish-grey color form a low precipitous shore. The same stratified rock alternates with thin-bedded sandy slates, showing on the south-eastern coast margin of the small Island Track, only a few cables length distant, the accompanying section—pl. 2, fig. 4. Besides a fault, the strata form a saddle and strike from S. S. E. to N. N. W. In a sandstone bank I found here imbedded a rolled fragment of a bituminous coal, the same of which I met with a larger but equally rolled fragment on the strand of the Island of Trice. Of coal seams there was, however, no trace to be detected; what might be mistaken for them from a distance was only the shadow of softer sandstone banks, deeply weathered out, or the darker color of some strata.

Pulo Milu.—A small island on the northern coast of *Little Nicobar*, which Dr. Rink has so excellently described in all its peculiarities, consists, in the higher parts, of a grey, fine-grained, micaceous and calcareous sandstone in massive banks. Very often spheroidal concretions are to be observed showing on the soft weathered surface like cannon balls. No trace of fossils could be found. The massive banks have thin-bedded sandy slates interstratified. The strata strike from S. S. E. to N. N. W., dipping to east at an angle of 45° Dr. Rink (loc. cit., p. 50) mentions a fossil resin in the sandstone of Milu.

Pulo Milu was particularly instructive for me, because the dependence of the vegetation on the soil and its geological basis could be perfectly well recognised. The vegetation and the geological formation of the ground stand in the closest relation to each other, as clearly shown by the accompanying sketch plan. The sandstone hills are covered with jungle; the coral (calcareous) ground with high forest trees; the saline, calcareous, sandy ground is occupied by cocoa-palms, and in the fresh water swamp on the declivity of the hill range, which resembles in its curve a horse shoe, thrives the finest forest of *Pandanus* which we have seen on the Nicobar Islands.—pl. 2, fig. 5; *Plan of the Island of Pulo Milu.* 1—Sandstone with bushy forest: 2—Coral conglomerate, with high tree forest: 3—Coral and shell sand, with forest of cocoanut trees: 4—Coast reefs: 5—Fresh-water alluvium, with forest of *Pandanus.* Pl. 2, fig. 6, *Section. of same island on line A B, Fig.* 5.

We have not visited the coast of Little Nicobar, the mountains of which rise to an elevation of 1,000 feet above the sea.

Kondul,—between Little and Great Nicobar—consists of a hilly ridge, one and a half nautical miles long and half mile broad; its strata strike N. N. W., and dip at 70° towards east. The western side is the precipitous one. The strata represent an alternation of more or less

sandy or clayey beds. The sandstone predominates, it is yellowish-white, with ferruginous reddish-brown particles. The clayey beds partly consist of a greasy plastic clay, partly of a crumbling yellowish clay marl, with intercalated thin-bedded sandy slates. The only organic remains which I found were indistinct traces of *algæ* and small rolled fragments of coal.

Great Nicobar.—What shall I report of Great Nicobar? With the exception of some sandstone hills on the nothern coast, and the sandstone ranges on the eastern side of the Galathea Bay in the south, I have not seen anything. Great Nicobar, with its mountains rising up to 2,000 feet, is geologically quite a *terra incognita.*

A very remarkable earthquake, which is said to have lasted from the 31st of October to the 5th December 1847, on the Nicobar Islands, at which time also earthquakes occurred in the middle and western part of Java, is described from the *Penang Gazette* in *Junghuhn's Java* (part II, p. 940). On this occasion fire is said to have been seen on one of the mountains of Great Nicobar.

Can the highest mountain of Great Nicobar be a volcano? Its form is that of a volcano, but as Junghuhn says that one could land on the southern coast of Java, wander about many days among sandstone and slate rocks, without obtaining through any of the phenomena even a trace of the stupendous volcanic nature of Java; in the same way there may be in the interior of Great Nicobar rock-formations hidden, of which one does not get an idea along the coast. However, I do not attach any importance to the rumour that fire has been seen on Great Nicobar, though the description of the earthquake seems trustworthy, as I had myself occasion to observe on Kondul the mountain-slips referred to in the account.

These few observations, combined with those of Dr. Rink, give us the following, probably still very imperfect, idea of the geological nature of the Nicobar Islands.

Among the various geological formations on the Nicobar Islands, *three* are the most important :—1—*An eruptive serpentine and gabbro formation*: 2—*Marine deposits, probably of a later tertiary age, consisting of sandstone, slates, clay marls and plastic clay*: 3—*Recent coral reef formations.*

The serpentine and gabbro formations of the Nicobars is characteristically of an eruptive nature. The tertiary sandstones, slates and clay-marls appear forcibly broken through; their strata are partly inclined, partly bent in flat, parallel, wave-like undulations. These rocks are accompanied by coarser and finer breccias composed of angular fragments of these same rocks, and they can partly be regarded as friction-breccias, partly as sedimentary tufas in which beds of an argillaceous marl are interstratified. The eruption of these plutonic masses appears, therefore, to belong to a time when the formation of the

marine deposits was partly completed, partly still in progress. They broke through on lines of fracture of which the principal strike from S. S. E. to N. N. W. agrees with the longitudinal extension of the islands. On the middle islands, the serpentine and gabbro attain their greatest development; on Tillangchong, Terressa, Bompoka, Carmorta and Nancowry they form bare hill-ranges of from 2,500 feet elevation, and their configuration often marvellously resembles those of later volcanic formations. The elevatory force has, however, acted most strongly on the southern islands, and has here upheaved sandstones and slates probably to heights of 1,500 to 2,000 feet above the level of the sea; on the low northern islands that force was, on the contrary, weakest.

With regard to the sedimentary deposits, I may state that Rink called the argillaceous deposits of the northern islands "older alluvium," and the sandstones and slates of the southern islands "brown-coal formation." In separating them from each other, he considers the former as being derived from plutonic rocks through chemical and mechanical decomposition, and as only of a local character. According to this the archipelago of the Nicobars is divided by him into two geologically different groups,—an opinion with which I cannot agree.

The clays and clay-marl formations of the northern islands, Car-Nicobar, Terressa, Bompoka, Carmorta, Trinkut, Nancowry, and the sandstones and slates of the southern islands, Katchall, Little and Great Nicobar, appear to be only petrographically different products of one and the same period of deposition. There are at the same time very few materials from which the age of the marine formations could be determined, as the only fossil remains which have been found in their strata are fragments of *drift wood* changed to brown coal, plant impressions resembling *Fucoids*, *Foraminifera* and *Polycistinæ*. But all these remains indicate more or less distinctly a late tertiary age.

The same conclusions are derived from a comparison with the geological conditions of those islands which lie on the same line of elevation as the Nicobars; I refer especially to Sumatra and Java.

I have not the least doubt that the clay-marl and sandstone formation has its perfect analogue among the tertiary deposits of Java, which I had myself the opportunity of studying and comparing in their distribution and lithological character. These became first known through the late Fr. Junghuhn, whose researches on the physical geography of Java are of such merit.

According to Junghuhn, one-fifth of the surface ground of Java is alluvial soil. This is especially prevalent on the northern side of the island, extending from the coast inwards either one, or sometimes five to ten English miles; one-fifth of the island consists of volcanic

cones, or their immediate vicinity where the lower rocks are covered up by volcanic products. These conical hills chiefly occupy the interior of the island, sometimes stretching in a double range from west to east; while three-fifths of the area are occupied by tertiary rocks. Either in flat protuberances or in clod-like elevations, these tertiary rocks always surround the volcanic range on two sides, the southern as well as on the northern. On the northern side, the less highly upheaved tertiary strata underlie the alluvium, and therefore occupy on the surface a small area. In an unequally greater degree, the tertiary deposits are developed on the southern side of the volcano, both as regards height and horizontal extent. They are mostly visible split in clods (schollen) which always rise higher towards one side,—the north, or towards the volcanoes,—and are at their highest edge upheaved to two, three, and even to four thousand feet. It is also principally on the southern side that plutonic rocks occur in the Neptunian deposits of Java, which are occasionally only represented by narrow and sharply-defined veins, without any influence upon the structure and configuration of the surface; sometimes, however, they form small hill ranges or isolated hills, similar to the serpentines and gabbros of the Nicobar Islands.

According to the reports of the Dutch Mining Engineer, Hugueniu,* a repetition of the geological formations of the Nicobars appears to be met with in the Tjiletuk Bay (the southern lateral bay of the Wynkoop Bay on the southern coast of Java). The prevalent formations here are sandstone-conglomerate and highly developed greenstone-breccias, besides plutonic rocks of the greenstone group. From specimens which I had an opportunity of seeing in the local collection at Beutenzorg, I found that these plutonic rocks are serpentines, gabbros, and aphanites, exactly similar to those of the Nicobars. Equally identical with those occuring on the Nicobar Islands, appear to be the chalk-white clay-marl in the middle portion of Bantan, and the fine white marls in the southern portion of Tjidamar, mentioned by Junghuhn (loc. cit., p. 13).

At the time of my stay in Java (1858), and from all I could find described, as well as from my own observation, I came to the conclusion that in the tertiary deposits of Java two principal groups can be distinguished, setting aside the limestone formation, the proper place of which, in the system of Javanese deposits, is as yet doubtful.† 1.—*A lower coal-bearing group:* numerous workable seams of brown coal are imbedded in quartzose non-calcareous sandstone and slate-clay with silicified stems of trees: marine shells are very rare, or absent. To this I referred the coal seams discovered by Junghuhn in the south-western part of Java, as also the coal formation on the Kapuas river in West Borneo, and the extensive coal districts in

* Naturkundige Tijdschrift voor Nederlandisch Indie, Theil XII, p. 110.—1856.

† According to Junghuhn this limestone is the latest of all the formations, and is always to be found only in superficial banks.

Southern, and Eastern Borneo, finally the coal of Benkulen (Bencoolen) on Sumatra, and numerous other similar deposits scattered over the Indian Archipelago. 2.—*An upper group without coal:* a clay and sandstone formation with plastic clay-slates, argillaceous marls, calcareous sandstone, trachytic tufas, breccias and conglomerates, rich in marine shells, fossil plants, fossil resin, but merely with nests of coal in place of coal seams.

Reasons, which I have given elsewhere,* have induced me to regard this complex group of strata as probably of Eocene age. This opinion may even now stand as regards the lower group, while as regards the upper group, I gladly accept the opinion of my friend Baron von Richthofen, and the conclusions derived by H. M. Jenkins,† from which these fossiliferous deposits appear to be younger Miocene.

I suspect that to this upper Miocene group correspond the tertiary deposits of the Nicobars, although fossils confirming this suggestion have yet to be discovered. It is also beyond doubt that these deposits are not wanting on Sumatra, in certain respects a connecting link between Java and the Nicobars. Junghuhn (loc. cit., p. 8) justly remarks: "The tertiary formation appears to have a submarine extent over the whole of the Indian Archipelago, because wherever within this Archipelago the earth's surface rises above the level of the sea, this Neptunian formation is observable. I know this for certain as regards Northern Sumatra, where the tertiaries are especially found in the Batta districts (Battaländern). With the exception of the trachytic island Dungus Nasi all the islands in the Bay of Tapanuli (situated exactly in the prolongation of the Nicobars), besides the adjoining low shores of Sumatra, and partially also the mountains near Tuka, are composed of more or less upheaved sandstone strata, containing, though sometimes rarely, tertiary shells." Thus it appears to be principally on the southern coast of Java and the south-west coast of Sumatra that we find a repetition of the geological conditions of the Nicobars.

The commencement of the eruptive formation is in Java inaugurated by serpentine, gabbro, massive rocks resembling diorite (greenstone trachytes as in Hungary); more or less typical trachytic rocks follow, and the grand volcanic eruption extending up to the present time forms the termination of the enormous eruptive phenomena in the Indian Archipelago. At the same time it appears that the eruptive line has been shifted slowly on Java from S. to N., and on Sumatra from S. W. to N. E., so that this line would strike east as regards the Nicobar group in the same longitude in which east of the Andamans it re-appears on the volcanic Barren Island and Narcondam.

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* Reports on the doings of the Mining Engineers in Netherlands, India (Jahrbuch der k. k. geol. Reichsanstalt, Wien, 1858, p. 277).

† Quart. Jour. Geol. Soc., London, Feb., 1864.—F. Baron von Richthofen, Zeitschrift der deutschen geol. Gesellschaft Bd. 14, p. 327.

The later tertiary age of the serpentine and gabbro eruptions on the Nicobars and Java has its perfect analogue in the eruptions of the same rocks in Central Italy, which, according to Signor Perezzi, in Turin, and Prof. Savi, are partly Eocene, partly Micocene, and which, on account of their copper ores, are of importance to the miner.

The third class consists of coral formations, belonging to the most recent or the present period. Coral banks of great thickness are found on Car-Nicobar, Bompoka and several other islands; they consist partly of a compact coral limestone, partly of a coral or shell conglomerate upheaved up to 30 and 40 feet above the present level of the sea; on all the islands, the original area is to be observed enlarged by coral-land, which is only separated by the higher sand dunes along the shore, from the still continuing formation of the coral-reefs surrounding all the islands in the character of fringing-reefs. Although these raised coral banks are a decided evidence in favor of the long-continued upheaval of the islands—that in connection with the eruption of the serpentines and gabbros—the formation of the flat coral land elevated only a few feet above the level of the sea can, on the other hand, be explained by the accumulation of coral fragments, of sand and shells by the waves and breakers on the shallow surface of the fringing-reefs. A detailed description of the peculiarities of the Nicobar coral-reefs, and of the formation of the low coral land has been already given by Rink, (loc. cit. p. 88. &c.).

II.—ON THE OCCURRENCE OF COAL AND OTHER USEFUL ROCKS AND MINERALS ON THE NICOBAR ISLANDS.

The question regarding coal was the principal point of inquiry during the first expedition to the Nicobars, which was undertaken in 1845 by Mackey, the Danish Consul at Calcutta, the Englishman Lewis and the two Danes Busch and Lowert.

The solution of this question was a second time the problem undertaken by Dr. Rink, as geologist with the Royal Danish Corvette *Galathea*. The order of the day No. 5, which contained the instructions and directions for the survey and exploration of the Nicobar Islands on the part of the scientific expedition of His Majesty's Frigate *Novara*, made the reply to this question my duty also.* The facts on this point are as follow:—

The results of the first expedition were confined to the discovery of single pieces of coal on the strand of the southern islands.

* This instruction runs:—"According to the report of the naturalists of the Danish expedition, coal and probably also precious metals occur. As far as this may be verified, samples in sufficient quantity ought to be collected; equally so in case of metals being found. In general it is however to be reported, as regards geological conditions, how far conclusions can be drawn from the existing rocks as to the occurrence of useful minerals, &c. Of the rivers and springs, the temperature should be ascertained, &c., &c.

Dr. Rink found several places where coal occurred on Little Nicobar, Trice, Milu, and Kondul. "The coal, however, proved everywhere to be in isolated masses varying from one to two inches in thickness." The incorrect (as already stated) designation of "brown coal formation" for the sandstones and slates of the southern island might have been the cause of misunderstanding; but Rink himself (loc. cit., p. 53) expressed his results thus:—"There appears to be nothing found on the Nicobar Islands which would correspond with the coal formations of South-Eastern Asia. The coal localities were met with here and there without any order either in sandstone or in slate, and appear to me, therefore, to be derived from driftwood which was deposited with the clay and sand. I nowhere found anything which could indicate an accumulation of plants in basin-like depressions, in which the plant would be growing *in situ*, and through which the surrounding masses of clay would be impregnated with organic ingredients and mixed with portions of plants. The question, therefore, still remains pending whether those brown coals occur in considerable quantity, as the quantity and size of the collected pebbles would seem to indicate."

I too succeeded no farther than in finding single fragments of brown coal. The first fragments were met with on the strand of the small Island Trice; it was a brown coal with conchoidal fracture, but still with distinct structure of wood. The pieces were all rolled, and the largest—5-inches long, 4-inches broad and 2-inches thick—was bored by *Pholididæ*. I do not doubt that these pieces were derived from the beds of the sandstone or slate of Trice; but on the opposite Island (Track) I was fortunate enough to knock out of the sandstone, *in situ*, a small fragment of coal also rolled. Exactly in the same way I also found small fragmentsof brown coal on Kondul and on the south side of Great Nicobar, partly on the strand, partly in the sandstone or slate rock, and it is certain that these pieces occur all through the group of islands. The condition of all the brown coal fragments met with tends to show that they were only singly imbedded driftwood pieces, which were changed to coal, not that they belonged to large coal seams through the destruction of which they have come into more recent strata. Only on the strand of Pulo Milu have I obtained pebbles of true coal with laminated structure, such as is only to be found in seams. It is, however, much more probable that these pieces of coal came from the Steamer *Ganges* accompanying the *Galathea* in 1846, and stopping for some time about Pulo Milu, than that they were derived from coal seams on the Nicobars. I therefore entirely agree with Rink's opinion that, so far as it is possible to make observations, nothing speaks in favor of the existence of true coal basins on the Nicobars, and that the occurrence of workable coal is not probable. However, the area of Great and Little Nicobar is large enough to hide under the thick primeval forest formations of which no trace may be observed along the coast. Until the interior of these islands has been examined, the question

regarding coal on the Nicobars cannot be answered in any other way than it was by the first expedition.

Equally unfavorable must be the opinion regarding the occurrence of ores or other useful minerals. Nothing of the kind has yet been found on the Nicobars. Gold and useful minerals are in some cases abundant on islands and along coasts which, viewed geologically, belong to the same area of elevation as the Nicobars, as I have already pointed out. The natives who long ago observed those fragments of coal, who use glass, pearls, silver fragments, &c., as ornaments, who know the plants and animals of their islands pretty well, and who have special names for all more common phenomena, for all useful products of the animal and vegetable kingdom, these inhabitants have as yet found among the rocks of their islands nothing that they would be able to make use of for ornament or other useful purposes. The only traces of ore which I found were those of iron pyrites and copper pyrites, finely disseminated through dioritic and serpentine-like rocks. The possibility of the occurrence of copper ores in the eruptive formation cannot be denied; however, no discovery has as yet been made which would indicate it. On the other hand, the islands are rich in useful building materials. The sandstones of the southern island must give excellent working stones; the plastic clay of the northern islands could no doubt be equally well worked into bricks or pottery; the natives of Chowry make large pots of it. Finally, lime is offered by the coral-reefs in inexhaustible quantity along the coasts of all the islands.

III.—THE SOIL AND ITS VEGETATION.

[*Only brief extracts of thissection are given.*]

Dr. Hochstetter states that vegetation in its original state always indicates the character of the soil, provided the atmospheric conditions are the same. This is remarkably true in this case of the Nicobars. "Neither the difference in the latitude from the most northern to the most southern islands (2½ degrees), nor the difference of the absolute elevation (the highest hills on Great Nicobar only attain about 2,000 feet above the sea), is large enough to produce on the single islands, or parts of them, such a difference in the climatal conditions, that on it alone an altered character of vegetation should depend. Rocks, soil and vegetation are, therefore, on the Nicobars in such a degree related to each other, that the areas marked on a map as indicating various rocks would almost coincide with those indicating the varieties of vegetation. Unfortunately the sketching out of such maps for the larger inaccessible islands is impossible; to indicate it I can only attempt a representation of the small Island Milu (Pl. 2, Fig 5.) and the north-western bay of Little Nicobar."

"The results of these observations may be seen in the following tabular view:—

Geological character of the underlying rock.	Character of soil.	Respective character of vegetation.
1.—Salt and brackish swamp, damp marine alluvium.	Swampy ground not capable of cultivation.	Mangrove-forest.
2.—Coral conglomerate and coral sand, dry marine alluvium.	Fertile calcareous soil; principal constituents, carbonate and phosphate of lime.	Cocoa-palm forest.
3.—Coral conglomerate and coral sand, beside dry fresh-water alluvium.	Fertile calcareous sandy soil.	Large forest trees.
4.—Fresh-water swamp and damp freshwater alluvium.	Swampy ground, capable of being cultivated.	Pandanus forest.
5.—Plastic clay, magnesian clay, marls, and partially serpentine.	Not fertile, clayey soil, principal constituents, silicate of alumina and silicate of magnesia.	Grassy plains.
6.—Sandstone, slate, gabbro, dry river alluvium.	Loose clayey sandy soil, rich in alkalies and lime, very fertile.	Jungle (the true primeval forest).

"*The Mangrove forest.*—Several deep channels, rich in fishes and navigable by the canoes of the natives, occasionally extend in serpentine turns through these mangrove-swamps. One not uncommonly meets at the end of such channels, in a hidden locality, the villages of the natives, as for instance, on Trinkut the pirates' village Dschanoba," (Janoba).

"The brackish-water alluvium, the ground of the *Rhizophori* and *Cerithia*, must, therefore, be considered as a soil perfectly unfit for cultivation. It occupies only a small area as compared with that of the islands, but it is nevertheless of a mischievous importance. For it can justly be said that the Nicobars owe their unhealthy climate principally to these brackish-water swamps, as they occasionally extend for miles from the mouths of the rivers into the interior. In these swampy districts, the change of the fresh to salt water causes a decay of the organisms, which can only exist in the former, the reverse takes place in salt water changing to fresh water. The ebb exposes large areas, and decomposition of organic life takes place, filling the air with most poisonous miasmas."

Dr. Hochstetter says that he especially had opportunity of studying these marked changes on a grand scale on the northern coast of Great Nicobar (west of the Ganges harbour). On the other hand, the

coral land appears to be at once fertile, capable of cultivation, and healthy, and the dry marine and fresh-water alluvium, to which on the sea coast belongs the cocoa-palm forest, and further inland extending to the base of the hills, a beautiful forest of various kinds of large trees. This is the ground which the natives of these islands have selected for their abode, finding here all the necessaries of life.

The cocoa-palm forest is described by Dr. Hochstetter as the picture of life, and he thinks that if the cocoa-palms had not been there, the islands would have been probably uninhabited up to this time. He further states that, taking the number of the inhabitants of all the islands to be 5,000, there would be about five and a half millions of nuts required for annual use. The annual export of cocoanuts can further be estimated as about ten millions, for Car-Nicobar alone exports between two and three millions. This gives fifteen and sixteen millions of cocoanuts to meet the annual demand. On the northern islands, the cocoa-palms occupy comparatively a larger area, while on the southern islands, especially on Great Nicobar, they are nearly altogether wanting. The northern islands are, therefore, the most thickly inhabited, and the cocoa-palms are there divided as property, but on the southern islands they appear to be the free, common good of all.

"The Nicobarian not only lives on, but also in, the cocoa-palm forest, having selected for himself not only the most comfortable place for his hut, but being on the dry coral ground, exposed to the current of the wind, also the most healthy situation."

"*The high forest.*—This is chiefly composed of large trees with rich foliage." Several valuable timber trees, and others, useful on account of their fruits, are here mentioned.

"The finest high forest I saw on the southern coast of Car-Nicobar."

"*The Pandanus forest*, in which this remarkable tree suppresses all other vegetation, except a few *Areca* and *Rotang*-palms, occurs only on the swampy fresh-water alluvium along the course of rivers and streams, especially near the sea where the rivers form more or less permanent basins. Here it is *Pandanus mellori*, the largest kind of *Pandanus*, which forms the forests. I believe that what we saw of the Pandanus forest on Pulo Milu was one of the most peculiar pictures of tropical vegetation seen during the whole of our journey."

"The *Pandanus* is not cultivated on the Nicobars; it is most flourishing in a wild state, and is, after the cocoa-palm, the most important plant for the natives as regards food: it is the truly characteristic plant of the Nicobar Islands.

"*Grassy plains.*—If one has succeeded in marching from the flat coral-land through the high and *Pandanus* forests, he generally reaches the foot of hills, rising on the larger southern islands, Great and Little Nicobar, to a height of 1,000 to 2,000 feet above the sea, but on the northern islands they are not above 500 to 600 feet. This hilly land

certainly occupies $\frac{3}{11}$ to $\frac{1}{4}$ of the whole area. It is composed of rocks of the gabbro and serpentine formation, and of the clayey and sandy tertiary beds, formerly noticed. The eruptive rocks are comparatively of small extent. Where felspathic gabbro forms the ground, this, being produced by the decomposition of the rocks, may be said to be fertile; it is covered with thick forest, but even the serpentine Island Tillang-chong has a flourishing primeval forest. On the other hand, a remarkable difference is perceptible in the vegetation of the tertiary ground."

"The hills of the northern islands are to a great extent only covered with grass; those of the southern, however, chiefly with a thick forest vegetation. This distinction rests upon an essential difference in the composition of the ground. The hills of the northern islands consist of a sterile argillaceous soil; those of the southern islands, on the contrary, of a fertile calcareous, sandy-argillaceous soil."

"Where the most favorable tropical climate could produce nothing else but stiff and dry lalang-grass (*Imperata*), and rough Cyperaceæ (*Scleria, Cyperus, Diplacrum*), surely there nature has clearly enough left the stamp of sterility; yet just between such grassy hills, which from a distance look so homely, resembling fields of corn, have the colonists on the Nancowry channel established their houses and gardens. The grass grows now high enough above their burial grounds; the breakers play, with the bricks with which they built the houses, and enclosed their gardens and fields; every path has disappeared. On Car-Nicobar I saw these grassy plains partially cut down, because the natives use the grass for thatching their houses; and on Carmorta large strips were in flame."

The grass vegetation, says Rink (*loc. cit., p.* 136), which to the greatest extent covers these islands is, in the valleys at the base of the hills, very thick and high; it becomes, however, higher up, thinner and shorter. On the places which are sufficiently damp many soft grasses may occur rich in juice; but on the tops of hills, where the dry magnesian claystone locally penetrates through the scanty layers of soil, and is also partly covered with a coarse ferruginous sand, while the showers of rain carry all the finer particles which may be produced by decomposition into the valleys, there, as a rule, only dry and rough siliceous *Gramineæ* and *Cyperaceæ* are to be met with.

The area which may, therefore, in future be successfully cultivated is that of the southern islands, composed of sandstone and slate, producing a fertile argillaceous sandy soil. On Little and Great Nicobar with the small Islands Pulo Milu and Kondul, the hilly land may be estimated at nearly two-thirds of the total area. These islands are therefore in point of colonization the most important, and a comparison with Ceylon and Pulo Penang shows what could thrive where now impenetrable primeval forest covers the whole surface.

Primeval forest.—This is of great extent, and the coast inhabitants of Great Nicobar tell of the existence of a wild tribe, forest-men, ("jungle-men") with long hair, inhabiting small huts or trees, and living

upon honey, roots, and game. But no European eye has yet sighted these forest-people. Dr. Hochstetter describes in vivid language the evermore forest-clad parts of Great Nicobar, which were visited by some of the party along the deeply indented water courses and ravines.

IV.—Springs, Streams, and Rivers.

The annual rainfall of the Nicobars is unknown; but very likely it is considerable; I think 100 inches is no exaggeration, because the two seasons, usually distinguished—the dry one during the N. E. monsoons between November and March, and the wet one during the S. W. monsoons between April and October,—are not so strictly separated on these islands as on the neighbouring continent, and, according to present experience, showers are not rare even during the dry season. The driest month of the year may be March. We had during our stay on and round the islands in this month only three rather heavy showers of rain. In April they become more frequent, until in May and June the S. W. monsoon rolled constant and heavy clouds over the islands.

If, therefore, peculiar geological conditions do not facilitate a rapid flowing off of the rain, the islands cannot in general want for water. And of this we could convince ourselves, inasmuch as the end of the dry season was unfavorable for the quantity of water in streams and rivers. Even the smallest islands like Pulo Milu and Kondul, though their small streams hardly had any water flowing, still had an abundance of fresh water in the numerous basin-like depressions of their beds. From the forest-clad heights of Tillangchong spring water still rippled out everywhere. The numerous streams and rivers of the southern large and woody islands, Little and Great Nicobar, possess abundance of water all the year round. But the northern island, as far as the argillaceous beds extend, appears to be deficient in water; this is specially the case on Nancowry, Carmorta, Trinkut, and probably also on Terressa and Bompoka. I found the small streams on Nancowry and Carmorta, leading into Nancowry harbour, perfectly dried up. The natives only drank cocoanut-water and they probably obtain the fresh water which they require for domestic purposes, &c., like the boiling of mellori, from the fresh-water swamps, which are locally to be met with in ravines. Of wells, except that made near the village Malacca on Nancowry, and which is now half in ruin, I saw nothing. Car-Nicobar, however, though also composed of argillaceous strata as the above-mentioned islands, has no want of good drinking water, because the large coral land raised from 8 to 12 feet above the level of the sea permits the digging of those remarkable wells, the fresh water of which falls and rises with the ebb and tide. The explanation of this rare phenomenon does not rest in the filtering of the sea water by the coral sand, but is rather the fact that the lighter rain water floats on the heavier sea water, and the porous coral rock only prevents the mixing of the two. I have seen several such reservoirs on Car-Nicobar near the villages Mous and Saui, they were all dug from 8 to 10 feet through the coral mass nearly

to the level of the sea at its highest flood, and contained good drinking water. Besides this, a river flows into the northern bay of Car-Nicobar, which we named Areca river from the luxuriant *Areca*-palms on its banks; this river is navigable with flat boats two miles upwards, and near the small rapids which one meets it also offers good drinking water, containing only a small portion of calcareous constituents in solution.

I have not become acquainted with any mineral or warm springs. The clay-marl rocks of Nancowry harbour are, however, seen covered with an inch-thick incrustation of sulphate of magnesia (epsom salts) in fine fibres with a silky lustre; this indicates a quantity of sulphate of magnesia in the clay-marls, and by digging holes in them, epsom salt waters may probably be obtained, as is the case with the bitter sandy-marls near Billin in Bohemia.

V.—Observations on the Temperature.

As we had, according to our instructions, to measure the temperas ture of rivers and springs, and as this task fell to my lot, as far as opportunity offered, I would put upon record here the few observations in this respect, besides a few remarks on the temperature.

A.—Temperature of the different waters.

1.—23rd February, on Car-Nicobar, water in the well near the village Saui at 8 feet depth in perfect shade ... ... 25·7*C.*
2.—27th February, on Car-Nicobar, Areca river, in the shade of the primeval forest ... ... 25·0*C.*
3.—4th March, on Tillangchong, western side, a spring in the shade of primeval forest ... ... 25·5*C.*
4.—4th March, on Tillangchong, another spring ... ... 26·0*C.*
5.—8th March, on Nancowry, old well of the Moravian Brothers, near the village Malacca, water at 8 feet depth in shade ... 25·7*C.*

If it were permitted to draw a conclusion from these few observations upon the mean of the annual temperature of the Nicobars, this mean would be 25·58*C.* (=78·04 Fahr.)

I have also measured the temperature of several other wells and streams, but as their water was temporarily exposed to the sun, very different results were obtained, as for instance—

On Car-Nicobar

24th February, well near Mous, water at 3 feet depth ... ... 27·0*C.*
25th ditto a stream between Mous and Saui ... ... 27·8*C.*
26th ditto river near Saui ... ... 29·0*C.*

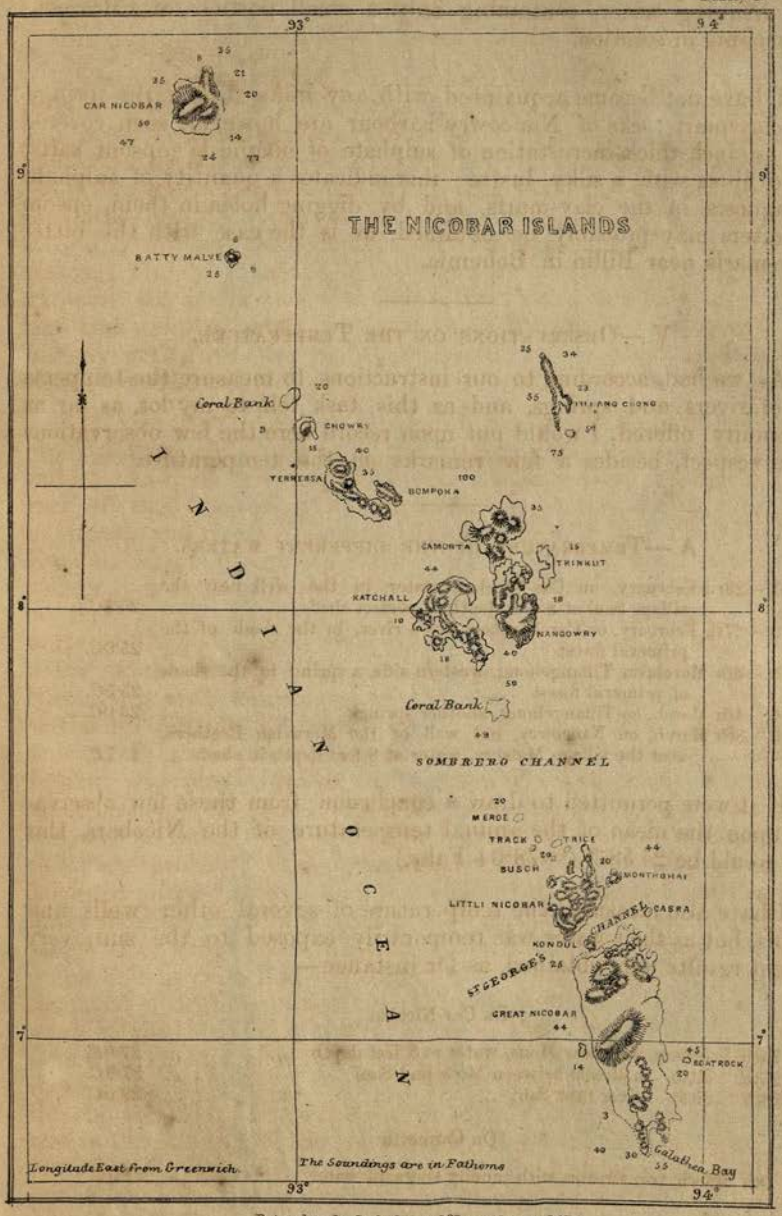
On Carmorta

9th March, two streams with muddy stagnant water ... ... 27·0*C.*

On Pulo Milu

18th March, stagnant stream water ... ... 26·5*C.*

Plate 1.



Printed at the Geol: Surv: Office, Calcutta 1870.

B.—Temperature of the Soil.

To obtain further materials for the determination of the mean annual temperature I made a few observations on the temperature of the soil, and these gave the following results:—

8th March, on Nancowry, near the village Inuang, the thermometer, after it had been exposed in a permanently shaded place for 6 hours, showed, when buried at 3½ feet depth underground ... ... 25·7, *C.*
20th March, on Kondul, also in 3½ feet after 6 hours ... ... 25·3, *C.*

These two observations give, as did those made in water, an annual mean of ... ... 25·5*C.* (=77·9 Fahr.)

This result is smaller than the records known up to the present, but these also do not rest upon sufficiently decisive observations. Rink who, during a stay on the islands between January and May 1846, never saw the thermometer under 25°*C.* and never above 33°*C.* in perfect shade, believes 28°*C.* to be the most probable mean.

According to *Johnston's Physical Atlas*, the line indicating the temperature of the sea surface of 30·5*C.* passes just across the group of islands, the annual isothermal being 26·1C., with the January isothermal of 25·0*C*, and the July isothermal of 27·2*C.*

As regards the monthly means, we obtain from the observations of the Danish Corvette *Galathea* every four hours—

For January 1846 ... ... 28·2*C.*
„ February „ ... ... 28·6*C.*

According to the hourly observations on board of the Frigate *Novara* the mean is—

For the days 23rd—28th February 1858 27·2*C.*
Ditto 1st—26th March ... 27·5*C.*
} mean 27·25*C.*

With this agrees pretty fairly the soil temperature which I measured at a depth of one foot—

On the 26th February near Sani ... 27·7*C.*
Do. 20th March on Kondul ... 27·0*C.*
Do. 26th do. on Great Nicobar ... 27·0*C.*
} mean 27·26*C.*

Finally, with regard to the daily means, they will be found, for the time of our stay on the Nicobars, in the observations recorded on board the vessel. It occurred to me when on Car-Nicobar to see whether the temperature of the water of young cocoanuts, when freshly cut down from a tree, standing in shade, would not indicate approximately the mean daily temperature. I found, on the 26th February, in two nuts a temperature of 27·2*C.* and 27·4*C.* as a mean of 27·3*C.* The journal kept on board of the frigate gives for the same day, as mean, also 27·3*C.*

From the Medical Report of the "Voyage of the Novara."—*By* Dr. Schwarz. *Vol. I., Section VIII.*

The Nicobar Fevers.

A special interest attaches to the visit of our expedition to the Nicobars. Our country at one time sacrificed a great deal, in order to take permanent possession of this group of islands, which are so valuable for the fertility of their soil, and so important for their geographical position. Other nations imitated our example, and had to suffer as we did; but in each case it was the unsatisfactory condition of the new settlements from a sanitary point of view which led to failures, and induced colonists almost joyfully to renounce their claims on these islands, no matter how dearly they had paid for the attempt to colonize them.

The hygienic state therefore of these islands, and the nature of the Nicobar fevers, deserve particular attention.

The following table shows the number of days we stayed in the several islands:—

February 1858.

21st, 6 o'clock P. M.—We sight land, E. S E.

22nd, 3 o'clock P. M.—Car-Nicobar before us.

23rd, 8¼ o'clock A. M.—We anchor off Saoni (9° 14′ 8″ N. Lat., 92° 44′ 46″ E. Long.*)

27th, 4½ o'clock P. M.—We sail away.

28th, 2½ o'clock P. M.—We anchor in the South Bay* of Car-Nicobar off Koom (9° 7′ 32″ N. Lat., 92° 43′ 42″ E. Long.*)

March 1858.

1st, 4½ o'clock P. M.—We sail away.

4th, 9 o'clock A. M.—We anchor off Tillangchong (8° 32′ 30″ N. Lat., 93° 34′ 10″ E. Long.*)

„ 5½ o'clock P. M.—We sail away.

6th, 9 o'clock P. M.—In Nancowry Harbour (8° 2′ 10″, N. Lat., 93° 29′ 40″ E. Long.*)

12th, 11½ o'clock A. M.—We leave.

17th, 11 o'clock A. M.—Off Trice (7° 28′ N. Lat., 93° 37′ E. Long.)

„ 4¾ o'clock P. M.—We leave.

„ 10½ o'clock P. M.—Off Pilu Milu (7° 32′ N. Lat., 93° 40′ E. Long.)

18th, 6¼ o'clock P. M.—We leave.

19th, 6 o'clock P. M.—In George's Channel, off Kondul (7° 12′ 17″ N. Lat., 93° 39′ 57″ E. Long.*), in the North Bay of Great Nicobar.

23rd, 10¼ o'clock A. M.—We leave.

24th, 9¼ o'clock P. M.—In the Galathea Bay (6° 48′ 26″ N Lat., 93° 49′ 51″ E. Long.*), South Bay of Great Nicobar.

26th, 5¾ o'clock P. M.—We leave the Nicobars.

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* Bearings taken by the Expedition.

We have to premise that our expedition reached these islands during the most healthy months of the year (February, March); and our excursions into the interior were not interrupted by any unusual fall of rain.

As mentioned elsewhere, the Nicobars being intertropical islands ought to have two rainy seasons about the solstices. This is, however, not the case, and the seasons, as everywhere else, depend on local circumstances. *First* of all, the climate of the islands is an insular one; *secondly*, the sun, in his career from the equator towards N., up to the time of the solstice, reaches a maximum angular distance of only 15 degrees, the average latitude of the islands being 8° N.; and this is the reason why there can be no lasting rainy season at the time of our summer solstice. The rains only commence after the stay of the sun in Capricorn, when the maximum distance amounts to more than double the above.

Notwithstanding this, the rains in the Nicobars do not commence towards the end of December, just as at home the cold does not reach its maximum on the 21st December, nor the heat its greatest intensity on the 21st June; but the extremes of temperature rather fall in the middle between the solstices and the equinoxes. The cause, as is well known, lies in the annual equalisation of temperature; for when the sun is in Capricorn, the warmth which our planet has received during the preceding summer has not so far eradiated as not to affect the daily temperature at the time of the solstices.

Besides, the Nicobar Islands are adjacent to the largest portion of land of our globe—the Continent of Asia, which requires a longer time for eradiation than any other portion of our planet. Hence, at the real height of our winter, the sun is not only half-way distant from the equator in his course from Capricorn, but has even often reached the equator, when the winter of the Nicobars begins. The air about this time is excessively damp; and during the period of the minimum of temperature, clouds invariably form, which, on cooling, suddenly result in watery deposits, as noted in the table attached to this report.

But the sun in his progress gradually equalises differences arising from the nature of these localities, and causes the monsoons which are closely connected with the seasons.

The S. W. monsoon which, in the Bay of Bengal, prevails during the latter half of May, June, July, and the first half of August, but sometimes lasts through September, produces a low temperature, and sends immense masses of clouds over the islands and the coast regions.

The N. E. monsoon appears in November, when the sun approaches the southern tropic, and lasts for three months, *viz.*, the latter half of November, December, January, and the first half of February. This monsoon constitutes the dry season. During April and May this N. E. monsoon gets changeable, and gradually decreases, when a sort

of interregnum between the two monsoons commences, during which time the wind is unsteady though mostly south-westerly. But in the second half of May, the wind turns to the S. W., when the rainy season, properly so called, commences.

During the two months of the interregnum, showers are numerous, though of short duration. The weather, however, is for the most part pleasant.

After the period of the S. W. monsoon to the beginning, of the dry season in the second half of November, there is again an interregnum, during which there may occur showers such as those above alluded to. For this period, however, we have no meteorological observations; but even should the showers be as numerous as those during the interregnum before the S. W. monsoon, the weather could scarcely be called bad. Be this as it may, people erroneously believe that the rainy season of the Nicobars extends annually over nine months. But if a meteorological observer calls the weather immediately before and after the rains "fine," it does not follow that it should be so from a sanitary point of view. Let us take a glance at the meteorological table of the temperature observed on board.

The table does not show such high degrees of temperature as observed on land. We may state, that our observers on the sandy coast of the Island of Kondul read at noon 40°, and in the southern harbour of Great Nicobar, 43° *Réaumur*. Though the intense heat during summer dries up every source of miasma, it is of importance to leave such places a considerable time before the actual commencement of the rains, because the air at this time is, as we saw, very damp.

During the thirty-two days of our stay in the Nicobars, we observed no real case of fever; and in connection with this remarkable fact, we shall give a short sketch of the hygienic status of the crew of the Danish Frigate *Galathea*. Her crew, like ours, had not a single case of fever during the forty days they were on the island; but the sailors and officers had to work on shore, and their stay in Nancowry Harbour, upon which we look as a place most dangerous to health, was rather prolonged. The naturalists of the party, on the 20th February 1846, made an expedition up the Galathea river, which flows into Galathea Bay, where, thirty-six days before, the *Ganges* with the members of the expedition had anchored. The party had to pass a night in the forest, and was surprized by a tropical thunderstorm, against which their tents afforded no protection whatever. On the 25th February, after a stay of forty-one days, the *Galathea* left for Pulo Penang, whilst the *Ganges* remained in the Nicobars. But after they had been eight days at sea, fever made its appearance among the crew of the *Galathea*, and cases even happened when the Corvette, on the afternoon of the 7th March, reached Pulo Penang. Every one of those who had passed the night in the forest took ill, and in the course of a week four of them died of fever.

We should not perhaps attach too much importance to the fact that the *Novara* during her stay in the Nicobars had no case of fever.

From these facts, we feel inclined to infer that the Nicobar fevers are neither so rapid nor so decisive as the fevers prevailing in other malarious districts, the unhealthiness of which is not more notorious than that of the Nicobars.

We shall now give a short account of our expeditions into the interior as far as they are connected with hygienic observations.

We do not profess to be minutely exact in geographical details; but we hope our remarks will be of some practical use to such as may in future visit these islands.

We had anchored before Car-Nicobar off Saoni, and selected, as point to start from, the bay situate in the middle of the steep M. W. coast, from which a straight road leads through the *Pandanus* wood towards the north-eastern portion of the island and the village of Mous. South of our starting point, after a walk of about three-quarters of an hour, you come to the mouth of Areca river, so called from a very dense *Areca* forest in the neighbourhood. Going eastwards from the mouth of the river, you reach the village of Saui, the road leading almost along the coast through the *Pandanus* forest (fresh-water marsh and fresh-water alluvium), in which you may also see *Arecas*, a few cocoa-palms, and here and there bamboo. Following the southern road towards Areca river, you will see a great number of trees (*Casuarina, Calophyllum, Artocarpus, Freycinetia, Terminalia, Ficus, Thespesia, Sophora*, several kinds of myrtles, &c.) which, near the coast, stand close to cocoa-palms and stretch further into the island, forming a mixed, but not very dense, forest. Going along the path through the forest (which at no place is very far from the coast) you will reach a salt-water marsh,* in which mangroves grow—*Rhizophora mucronata* and *Bruguiera rhedii*, the only species found in the Nicobars. If you follow the upper forest path, you will reach extensive meadows.

The tract of land near the village of Komios, in the Arrow or southern bay of Car-Nicobar, almost entirely forms part of the salt-water marsh. Where this marsh extends into the interior, a dense forest of different kinds of trees commences, which shut out the light, and prevent every access of air. Here the foot of the wanderer sinks into decomposing plants, progress is rendered difficult, whilst it is scarcely possible to breath the offensive, hot, and damp air. From

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NOTE.—The following sentence is taken from Steen Bille's Report:—"Doctors stationed in the Straits prescribe quinine immediately, and in large doses; but they look upon blood-letting as very dangerous, as it causes great prostration," which is in accordance with our experience.

* This marsh must have been more extensive at the time the *Galathea* was in the Nicobars, to judge by the maps of that Corvette.

this locality we made indeed a few attempts to go into the interior, but we must fix upon this spot as a fever centre, and as the most dangerous to health on the pretty Island of Car-Nicobar.

We have but little to say about Tillangchong. From the place where our ship lay at anchor (N. W.), we walked a few hundred paces through clusters of cocoa-palms, *Pandanus*, *Barringtonias*, as usually found on flat coast districts, and afterwards along the steep bank of a river through a thick forest up to the ridge of the hill, and from thence back to the coast.

But matters are very different in Nancowry Harbour, a locality against which visitors have so justly been put on their guard. On the south coast of the Island of Carmorta and on the north side of the Island of Nancowry, the sea in many places enters into the land, and thus a harbour is formed, the medial section of which extends from S.W. to N.E. The entrances are protected at some distance S.W. by Katchall, and N.E., at a nearer distance by Trinkuttee. The inner harbour is surrounded by hills not very high, but they are covered with dense forest, which, although not able to keep out the monsoons when blowing in full force, will yet successfully shut out the breezes which blow during the decrease of the monsoons, at the time of the variable winds. The consequence is, that the heat within the harbour is very oppressive, whilst the air, as a rule, is damp and vitiated. The air, moreover, is rendered more unhealthy by the neighbourhood of the Ulala Bay. This bay belongs to the Island of Carmorta, and lies about six (German) miles to the north of the west entrance of Nancowry Harbour, running parallel with the latter, and being separated from it by a narrow ridge of hills not very high. But the coast of this closed-up Ulala Bay is covered for miles into the interior with dense mangrove marshes.

In our excursions we generally started from the villages of Inuang, Itoe, Malacca (all of which are in Nancowry), the Monkata hills, and our observatories in Carmorta; and among the roads taken by us we may draw attention to a path which goes from Inuang along the coast. This road does not reward the visitor for the fatigues which he has to endure in marching through the morasses. We also visited the several villages and nearest bays in the harbour, in native canoes, and we also made longer and shorter excursions to the south coast of Carmorta and beyond it, without, however, entering deeper into the country.

But with exception of the tract round about the village of Komios, there is scarcely a single locality which we could connect with the fever cases we had on board. The naturalists of our expedition were only accompanied by such sailors as had been told off for this duty; all other sailors remained at the place of observation near the coast, whilst the crew came but momentarily and occasionally on shore. On the Island of Car-Nicobar, lastly, the Commander of our expedition made a boat trip up that river, to which he gave the name of Areca river, and which is entirely overgrown with jungle. We have before us

returns of the names of the boatmen who went up the river, as also a list of the names of such sailors as worked on land, and we shall compare their names with our sick lists.

Though there is not sufficient reason to refer the inhalation of miasma up to our entrance into Nancowry Harbour to any locality in particular, we could urge nothing against the opinion that the first process of poisoning took place in Nancowry. We have here to mention a few untoward events. On the 6th March, at 5 o'clock P. M.; we doubled the southern point of Trinkuttee, and directing our course towards the eastern entrance of Nancowry Harbour, passed Malacca Point. There was a strong current from the west. About 5¾ o'clock, the lead indicated a depth of 24 fathoms, and it was now that we had to struggle with difficulties, which engaged the whole crew for more than three hours. At 9¼ we anchored, the depth being 19 fathoms, when the sailors, with the exception of the watch, were sent below deck. The watch had several other duties to perform. It was 1 o'clock A. M., and the moon shone bright. There was a heavy dew-fall. An hour after the watch had been relieved (4 o'clock), the men were ordered on deck, the usual morning work was done, and the great anchor had to be weighed as we wished to enter the harbour. At 10½ o'clock, we anchored near Itoe, after towing her up the canal by our boats. Thus it will be seen that the work of the crew, from the preceding night till noon the next day, was very heavy.

On the same day a similar event, though not so disagreeable, took place. Several gentlemen had gone ashore in the officers' boat; one of the officers went too far into the forest, and lost his way. The boat in the mean time had to wait. We went in all directions looking for the absentee, when suddenly a shot was heard in the forest. We replied, and were soon again all together. But the ebb had left our heavy boat sticking in marshy water between the corals, and we had all to work to get the boat away. Sailors and officers worked hard; all perspired most freely, standing at the same time up to the knees in water. When we arrived on board, we did not forget to do justice to the gin bottle.

In Nancowry Harbour the crew had again to do much heavy extra work. The ship was placed on her side, repairs were made, and something had to be altered in the tube of the distilling apparatus. It is unnecessary to refer to the fatigues which the officers on shore had to endure in performing these tasks in the shortest possible time.

During the moonlight nights we had invariably heavy falls of dew, and the temperature was chilly for such as worked on deck, but excessively close for all below.

We cannot say much of Trice and Track, nor of Pulo Milo. A few places on the last island are very damp and marshy, and the ferns were very conspicuous. Whilst we were occupied on land, the Captain explored two canals of brackish water in the mangrove marshes North of Little Nicobar, in order to see whether he would meet with fresh water; but regard for the health of the crew obliged him to return, as the air was damp and the heat unusually oppressive.

The small Island of Kondul also, situated between Great and Little Nicobar, offers the physician nothing worth recording. But we have to mention an event which immediately afterwards led to a case of sickness.

Several gentlemen wished to walk round the Island of Kondul. This would have been an easy task, if the coast had been everywhere flat and sandy; but the wanderers met about half-way several steep declivities, and unwilling to return, they resolved to go on wading through several shallow places till they came to similar declivities. But here the surf forced them to climb up the edge of the precipice and down again. At a few other places also the road was likewise obstructed, and it was after sun-set when they at last reached the place of embarkation, perfectly exhausted, thirsty, hot, and wet through. In this state they had to wade towards the boat, and had then to sit quietly till they came on board the ship. Such fatigues, in any part of the world, would result in sickness.

The north bay of Great Nicobar appeared to us fast decreasing. The sea has evidently been receding, for far into the country we met with decayed mangroves. The south coast, up to the place where the hill commences, is entirely composed of salt-water marshes. It appeared to us as if another vegetation would soon occupy the ground, which is now laid bare. To the right and left we had continually to wade through brackish water; only towards the extreme ends is the bay sandy.

When lying in Kondul Harbour we had heavy showers; we had also to cut down trees and to ship wood for fuel.

On the 23rd March, at 2 o'clock P. M., whilst sailing along the coast of Great Nicobar, two smaller boats were despatched under the command of an officer for the purpose of making geographical observations. Towards 6 o'clock P. M. the larger of the two boats came back, and reported that the smaller boat had upset in the heavy surf. Another boat was sent to her assistance. The men of the unfortunate boat, after it upset, had done their best to save the instruments and the things belonging to the boat, and one can fancy in what state they reached the shore. Far and wide not a trace was to be seen of a settlement, and the men had to wait for several hours till assistance came, and even then they had to swim back to the boat, which had anchored far in the sea. About 2 o'clock A.M. they reached the frigate. This event also explains several cases of sickness.

The south bay of Great Nicobar resembles the northern one. A dense jungle surrounds the coasts of the so-called Galathea Harbour, and the interior abounds in tracts covered with brackish water. We did not go up the river.

We left the Nicobars on the 26th March. Though we had lived on board, we had to suffer a great deal from heat. We had frequent calms, and the occasional N.N.E. breezes did not help us away. For the first three days we lay as if spell-bound within the circle of the dongerous islands. Two days after our departure, we had a heavy fall of rain, and as our distilling apparatus, notwithstanding the late repairs,

was not in working order, it was resolved to collect the rain water In a short time we filled ten barrels, and later, on the 30th March, eight more. The crew, not satisfied with the daily quantum of water, drank a deal of water of the former rain-fall.

On the 10th April, or fifteen days after our departure from Galathea Bay, we were in 6° 25′ N. Lat., and 99° 4′ E. Long., and next day we sighted Pulo Penang, which is about 300 'sea miles' from the point where the Straits begin. The fatigues which the crew had to undergo in consequence of variable winds and calms, the frequent showers and the oppressive heat, had now come to an end, and five days later we anchored off Singapore. We now proceed to record chronologically our fever cases.

Table showing the days when Fever Cases were reported.

Month.	Days.	No. of Cases.	
		Slight.	Severe.
March	3	1	...
	11	1	...
	13	1	...
	17	1	...
	23	1	...
	28	1	...
April	2	1	1
	3	1	1
	4	1	1
	6	2	1
	7	2	1
	9	3	1
	10	2	...
	11	1	...
	14	1	...

A few details may be acceptable.

March.

The entries refer to the men. They were common fever cases, each of which yielded after the second and milder attack. But it is noticeable that since August 1857 we had not had a single case of fever on board. The first case happened in February, when the Nicobars were in sight.

The entries of the 11th and 13th refer to a midshipman who took part in the astronomical observations, and was without interruption exposed to the sun; and to a servant whose case resembles that of the midshipman, the cause being the same. In both cases the cold stage was wanting; it was more an erethic state, with violent headache, not accompanied by the prostration observed in undeveloped cases of Nicobar

fevers. No sooner had the doctor put a stop to the astronomical observations, than convalescence set in. The headache appeared again on the third day, after which both were all right again.

The entry of the 17th refers to myself; but the fever was so slight as not to interrupt the various but fatiguing duties which I had to perform at Pulo Milu, Kondul, and in the north and south bays of Great Nicobar. There was occasional headache, and a drawing pain in the limbs, the pulse remaining almost unchanged. There was no actual paroxysm. But the continuance of my labors, and the neglect which I showed to my health, caused, after our departure from the Nicobars, an actual though weak attack of fever with a little cold, followed by occasional headache and great prostration, which only left me after our departure from Singapore.

April.

The entry of the 2nd was a clear case attended by all characteristics of malaria fever. This case was followed by daily and severe cases up to the 14th, the day of our departure from the island, and several milder cases which were generally got over after the second or third attack. No case extended over 16 days, inclusive of the time of convalescence. On the 14th, we discharged several that had taken ill in the same month. The entries after the 10th were very mild and unimportant cases, and lasted from 6 to 9 days. The paroxysms were regular and complete, but the cold stage was short, though indicating little danger. We applied, however, the same strong remedies to slight as to severe cases.

Nicobar fevers are attended by the following symptoms:—The patient feels disinclined for work. Pains in the hips, or a drawing in the limbs ensue, accompanied by weakness. This is generally followed by violent vomiting, which so exhausts the patient that he faints. After a short time headache sets in, the patient is apt to cry, passes into indifference to everything about him, and gets either delirious or perfectly apathetic. In this extreme state the Nicobar fevers resemble typhus. The cold stage then commences, but the patient is rarely thrown about or shaken by the cold. The cold increases with the apathy, and the patient lies down quite prostrated. These several symptoms show themselves in the space of a few hours. Cases occurred in which patients could not get warm for twenty hours: the extremities felt cold like ice. The pulse was so weak, that no counting was possible. We looked upon the decrease of any of the more violent symptoms, headache, delirium, upon a slight commencement of warmth, or the appearance of a little perspiration or thirst, as the beginning of an improved status, and applied remedies forthwith. Friction, or artificial warming, produced no effect; but the action of quinine was very marked. Two or three doses of 10 grains dissolved in sulphuric or tartaric acid were given *in sherry;* and the same dose mucilagated and applied as enema (when vomiting rendered the usual mode impracticable) removed all symptoms causing anxiety. In rare cases only had we to go beyond this number of doses, and but few patients required more than 60 grains of sulphate of quinine to

complete the cure. The severer cases were attended by great prostration, which continued for several days. There were no sequelæ, such as bowel complaints. In some cases the spleen did indeed enlarge very much, but it decreased as rapidly; in fact we may say that we felt the spleen swelling and subsiding. All tumours were transient.

It is noticeable that the men who were generally employed on shore and were thus most exposed to local influences of climate and weather, furnished a small proportion of fever cases, and even these of the mildest. Besides the above-mentioned two cases of patients belonging to the staff, there were three others in which headache and prostration were the most marked symptoms. The severest case showed two, all others only one real attack, with no very marked acceleration of the pulse. Of the sailors and servants attached to gentlemen working on shore, four got fever; of such as had worked as boatmen during the excursions, two. We have also ascertained that not one of the sailors took ill who accompanied the Captain up the Areca river, nor of those who were in the two boats of which one upset in the surf off Great Nicobar. In any case two-thirds of our fever patients belonged to such as never left the ship. Two had been in hospital with *catarrh* before we sighted the Nicobars, and had fever-attacks whilst convalescent.

The preceding details will enable the reader to judge as to the malignity of Nicobar fevers. It appears strange to us that islands so rarely visited as the Nicobars are, should be looked upon as notoriously unhealthy. It is no doubt to newspaper reports, furnished by not over-competent hands, to which we have to trace this curious idea. Though we avoid quoting authorities in favor of opinions advanced by us, we may be allowed to cite here two statements, the only ones of scientific value known to us, inasmuch as they confirm, to a certain extent, our opinion as to the exaggerated description of the unhealthiness of these islands.

The older of the two records is the following passage by Surgeon Nicholas Fontana, of the Imperial Frigate *Joseph und Theresia*, which, for five months during the rains (1st April to 4th September 1778), remained among the Nicobars: —

"I must observe that all Europeans in India have a bad opinion regarding the salubrity of the Nicobars. The sad experience of the Danes, who, in 1756, had erected a factory here, was the chief cause of this unfavorable opinion. But I am not sure whether experience and closer examination will not allay the fears of people.

"The Europeans who first settled here did not pay proper attention and care to the choice of a spot suitable for a settlement. You may even now see the ruins of their dwellings; when the sea is high, they are under water, and they are, so to say, buried in jungle, circumstances which, at all times and in any locality, must endanger the health of colonists. During our stay in the island, the men, though much worked in clearing the jungle and levelling the ground, remained in perfect health, a few excepted that had exposed themselves to rain or passed the night on land. Neglect of this kind will of course cause the diseases

to which Europeans in the tropics, even in the healthiest localities, are exposed. But we believe there is every reason to hope that the settlement, without much labor and cost, may, even in a sanitary point of view, reach a high degree of perfection."

Recent expeditions to the Nicobars have led to more extensive enquiries into their sanitary state. We extract a passage from the Medical Report of the "Voyage of the Danish Frigate *Galathea*" :—

"The crew of our three ships amounted to 400, of whom 250 were Europeans. Though the men were overworked and often wet through, the health which they enjoyed during our stay of several months both among and on the islands, is above remark, and would show that their insalubrity has been much exaggerated. On the other side, however, we must not forget that our stay fell in the most favorable season; that no one remained on land at night; that the ships never stayed long at one and the same place, the longest stay in one locality being thirteen days; and that, with few exceptions, we enjoyed an uninterrupted sea breeze. Nor should we forget to record the single case of misfortune, traceable to the climate of these islands, when 21 of the 30 sailors who made an excursion along the Galathea river into the interior of Sambillang (Great Nicobar) took dangerously ill about eight or fourteen days after our departure from the Nicobars, 4 of them succumbing to the fever."

Our experience of Nicobar fever cases enables us to give a more favorable opinion. Not only did we not lose a single man, but we even managed to cut short the most dangerous cases, limiting them to three paroxysms at most. Strictly speaking, cases only happened between the 2nd and 20th April; but as early as the 15th April we had only one convalescent in hospital.

In placing our experience by the side of the statements of scientific men who, in former times, visited the Nicobars, we do not wish to imply that the question as to the malignity of Nicobar fevers is disposed of, though we doubt not that every medical man, after reading the preceding details, will have formed his own opinion. Another consideration will perhaps corroborate our inference.

It is clear that fever is the most prominent sickness in the Nicobars, though other epidemics—as cholera, small-pox, &c.,—may be expected to exist. We have unfortunately no data to ascertain the rate of mortality, or the proportion in which the population of the Nicobars increases. Nevertheless, every traveller who has visited the Nicobars, and the numerous writers who have accepted the estimates, compute the population to be about 6,000, the word 'about' expressing that the estimate is correct within a thousand. Our computations agree pretty nearly with the common estimate. Now the fact we maintain, that the average population of a secluded territory has remained stationary, may be looked upon as a satisfactory sign that no devastating diseases prevail there. An unusual increase or decrease of population, it is well known, is almost always connected with immigration or emigration; for the depopulating influences of idemics are, as a rule,

transient, though they may lead to extraordinary differences, as when 15,000 persons die in the course of a few weeks, as happened in Louisville, or 20,000, as in Rio de Janeiro, during a yellow-fever epidemic. But the inhabitants of the Nicobars, in spite of the absence of sanitary precautions, manage to keep their average population stationary,—sufficient reason, it would appear, for inferring that the climate of these islands is not more dangerous than that of any coast district of India. In comparing the Nicobars with places like Madras or Point de Galle, we would have to remember that the sanitary appliances of modern times have there removed many influences detrimental to the general health. We have also to bear in mind that the most terrible factors in the mortality of civilized countries—typhus and syphilis—are absolutely wanting in the Nicobars. Of course, if intending colonists should put down beforehand the probable rate of mortality among themselves as equal to the sum of the rate observed among the natives plus that due to diseases only found among civilized nations, the proportion thus arrived at might indeed be deterrent. But we are convinced that, though new diseases may be imported by colonists, local diseases, at present prevailing, will decrease. We have only to point to Pulo Penang, the nearest neighbour of the Nicobars, which is now-a-days used as a sanitarium, while, till lately, it was looked upon as one of the most deadly fever-nests.

The contrast between our opinion and the preconceived idea of people regarding the Nicobars may indeed appear remarkable. We listened once to a description of the sanitary condition of these islands, which was so exaggerated, that the battle field appeared to be a place of safety in comparison with a visit to the Nicobars. The well known fate of former colonists may have caused his over-drawn description. We took occasion to visit the spots where the Moravian Brethren, Father Rosen, and the latest colonists had established themselves; their settlements one and all lie in the most unfavorable localities on the shores of Nancowry Harbour—in itself an unfavorable spot—and of the Monkata hills, in close vicinity to extensive marshes and jungle which shut out every current of fresh air.

Let future colonists avoid repeating the mistakes made by their predecessors in the choice of localities suitable for the foundation of a colony, and it is not unlikely that they will be much less visited by fever than the natives. We may quote Madras as an example. The Europeans there suffer much less from fever than the Hindoo and Mahomedans who will not give up their old ways of living, though indeed that class of natives who have adopted modern appliances, shows a still more favorable result.

Let the marshes which we have seen, and of which we have heard, be drained,—their comparatively limited extent guarantees the possibility of doing so,—let the jungles be cleared and thinned in a sensible manner, according to the experience of colonists in other parts of the new and old world. As most suitable places for colonies we recommend *Car-Nicobar, Pulo Milu* and *Kondul*, where colonists would meet with a minimum of obstacles. If all this be done, we are convinced that the Nicobar Islands would soon become healthy and flourishing colonies.

Thermometrical Observations taken in the Nicobars between 22nd February and 31st March 1858.

Month.	Date.	DRY BULB. Maximum.	Minimum.	Duration of Maximum.	Duration of Minimum.	Daily Mean.	WET BULB. Maximum.	Minimum.	Duration of Maximum.	Duration of Minimum.	Daily Mean.	Pressure.	Humidity.	REMARKS.
February.	22	22·5	18·6	10 A. M.	5 A. M.	21·2	20·6	16·2	10 A. M.	5 A. M.	19·4	9·36	82·3	1 h. rain; 5 to 6 h. cloudy, threatening, storm; 9 h. rain; 12 h. lightning.
	23	22·8	21·	12-1 M.	5-10 „	21·7	20·8	19·5	12-3 P. M.	8 „	20·2	10·08	85·5	½1 h. heavy rain; 2 to 4 h. light rain; 6 h. drizzling; 8 P. M. clear night, moonshine.
	24	22·7	21·1	10-12 A. M.	6 „	22·	21·	19·9	10 A. M.	6 „	20·3	10·09	83·7	10 h. moonshine.
	25	23·	20·9	2-3 P. M.	4 „	22·	22·4	20·	3 P. M.	4 „	20·7	10·53	87·4	2 h. clear night; 8 h. A. M. water-spout in S.; 10 h. A M. great heat.
	26	23·7	21·2	12 M.	4-6 „	21·9	23·5	19·6	12 M.	8-9 „	20·3	10·12	84·6	6 h. A. M. moonshine; 9 h. light fog; 6 and 12 h. P. M. foggy.
	27	23·2	21·2	12 „	4-10 „	21·8	21·	19·6	12 „	9 „	20·3	10·15	85·4	4 h. A. M. moonshine; 10 h. moonshine; 11 h. clouds.
	28	24·8	20·3	2 P. M.	12 P. M.	21·7	21·8	19·4	2 P. M.	5 „	20·2	10·08	85·5	1 h. A. M. dewfall; 3 to ½6 h. A. M. eclipse of the moon; 6 h. foggy; 5 h. P. M. rainy; 11 h. moon clear.
	1	24·	20·9	2 „	12 A. M.	21·6	21·9	19·1	12 M.	9 P. M.	19·2	9·78	83·5	1 h. P. M. very sultry.
	2	22·9	20·8	12 M.	7 „	21·7	20·2	19·	12 „	6 A. M.	19·7	9·53	80·8	6 h. A. M. fog; 3 h. A. M. cloudy; 9 h. ditto; 10 and 11 h. dew.
	3	22·4	20·6	3 P. M.	3 „	21·6	20·3	19·6	3-4 P. M.	3 „	20·	9·89	84·4	1 h. to 3 h. A. M. rain.
	4	22·8	21·	12 M.	5 „	21·7	21·2	19·4	10-11 A. M.	5 „	20·	9·86	83·6	Fine weather.
	5	22·4	20·6	5 P. M.	6 „	21·5	20·2	19·	5-6 P. M.	6 „	19·7	9·59	82·5	Clear night.
	6	22·3	20·6	12 M.	6 „	21·3	20·3	18·8	11 „	5 „	19·5	9·43	82·3	Fine weather.
	7	23·9	20·3	3 P. M.	12 P. M.	21·9	21·8	19·8	3 „	6 „	20·6	10·45	87·4	4 h. A. M. heavy dew; 12 h. M. calm; 3 to 4 h. P. M. calm; 12 h. P. M. heavy dew.
	8	25·	20·3	2 „	12 „	22·1	23·7	19·6	2 „	12 P. M.	21·1	10·83	89·2	8 h. A. M. quite cloudy, rainy; 10 h. calm; 4 h. P. M. cloudy, rainy 12 h. dew.
	9	25·4	20·3	2 „	2-4 A. M.	22·1	23·5	19·5	2 „	4 A. M.	20·	9·73	80·0	4 h. A. M. pretty heavy dew; 10 to 12 h. P. M. temperature falls rapidly.

MARCH.	10	23·6	19·9	10 A. M.	12 P. M.	21·9	22·2	19·	2-4 P. M.	12 P. M.	20·7	10·57	88·4	4 h. very heavy dew; calm 8 to 12 h.; clear night.
	11	23·5	20·2	6 P. M.	2 A. M.	22·2	21·5	20·	8 A. M.	2 A. M.	20·6	10·36	85·6	2 to 4 h. A. M. clear night, heavy dew; 8 to 12 h. P. M. clear night, light dew.
	12	22·7	20·4	10-12 A. M.	2-4 „	20·	21·2	20·6	11-12 P. M.	8 „	20·6	10·68	93·9	10 to 12 h. A. M. cloudy, rain; 3¼ h. P. M. light rain; 4¾ h. drizzling; 10 to 12 h. some dew.
	13	23·8	21·1	12 M.	3 „	22·3	22·2	19·9	9 A. M.	2 P. M.	21·1	10·80	87·6	12 to 2 h. fog; 9 h. fog; 9 h. P. M. fog; falling stars.
	14	22·7	21·	12-4 P. M.	11-12 P. M.	22·5	21·9	19·6	7 P. M.	12 „	20·9	10·61	84·9	5 to 6 h. A. M. fog; 3 h. P. M. oppressive heat.
	15	22·8	21·	12 M.	2-5 A. M.	21·9	20·7	19·7	12 M.	1-2 A. M.	20·3	10·12	84·6	12 h. fog on the horizon; 6 to 7 h. P. M. calm, sultry.
	16	24·6	21·	12 „	10 P. M.	22·1	21·	19·	12 „	10 P. M.	20·4	10·52	93·9	11 to 1 h. fog; 10 to 12 h. P. M. pretty heavy dew.
	17	22·8	19·9	11 A. M.	5 A. M.	21·5	21·2	19·8	12 „	5 A. M.	20·1	10·03	86·3	1 h. fog; 2 and 3 h. dew; 5 and 6 h. light fog.
	18	24·2	21·	12 M.	2 „	21·9	21·4	19·6	12 „	2 „	20·1	9·90	82·7	Fine clear weather.
	19	23·4	19·8	1-4 P. M.	12 P. M.	21·9	21·8	19·	2-4 P. M.	12 P. M.	20·5	10·34	86·4	3 h. P. M. cloudy, raindrops, clear night, agreeable.
	20	23·4	19·3	3 „	4 A. M.	22·3	20·8	19·	3 A. M.	4 A. M.	20·	9·66	78·4	8 h. A. M. heavy dew; 12 h. P. M. very heavy fog.
	21	23·6	19·4	10-12 A. M.	4-6 „	21·4	21·8	19·	12 M.	12 P. M.	20·5	10·50	90·9	6 h. A. M. heavy fog, 7 to 7 h. 45m.; 8h. 30m. to 8h. 40m. light rain; 9 h. decreasing; 10 to 12 heavy fog.
	22	23·7	19·2	3 P. M.	4 „	22·1	20·8	19·	10 A. M.	4 A. M.	20·1	9·84	81·	2 to 6 h. dew; 8 h. fog.
	23	23·2	20·	12 M.	6 „	21·9	20·9	19·6	8 P. M.	4-9 „	20·3	10·12	84·6	2 to 6 h. fog, cold, damp air.
	24	24·	21·8	10-12 A. M.	1-4 „	22·8	21·6	20·	7-9 „	4 P. M.	20·9	10·51	82·3	4 to 6 h. light fog; 1½ h. P. M. heavy rain with squalls; clear night.
	25	24·4	21·8	12-2 P. M.	4 „	23·	22·4	20·4	12-2 „	1-6 A. M.	21·5	11·14	85·9	Moonshine; 6 h. dew.
	26	25·3	21·8	12 M.	12 P. M.	23·4	22·7	20·8	6 „	12 P. M.	21·9	11·48	86·	2 to 4 h. heavy; 4 to 8 h. light fog, clear night, moonshine.
	27	23·6	21·3	1-5 P. M.	2 A. M.	22·6	21·6	20·	12 M.	8-10 A. M.	20·8	10·45	83·	Moonshine; 7½ h. light rain.
	28	24·2	17·6	9 A. M.	12 M.	21·9	21·6	16·5	9 A. M.	12 M.	20·2	10·02	83·8	Moonshine; 10 to 11½ h. A. M. very strong rain; 9 h. P. M. fog, lightning.
	29	24·1	21·4	1 P. M.	3-5 A. M.	22·8	21·4	19·7	1 P. M.	3-5 A. M.	20·7	10·28	80·5	7 h. P. M. a few raindrops; 9 to 12 h. dew, lightning.
	30	24	20·	1 „	5 „	21·9	21·7	19·5	2 „	7-9 „	20·6	10·45	87·3	3½ h. heavy rain; 2 h. 56 m. ditto; 5 to 6 h. light rain; 1 to 2 h. P. M. heavy rain.
	31	25·2	21·8	1 „	4 „	22·7	22·4	20·	1 „	9 „	20·7	10·41	83·9	12 h. 15 m. light rain; 1 to 5 h. dew; 8¾ h. light rain; 10 to 12 h. light rain.
	Mean ...	23·5	20·6			21·7	21·6	19·4			20·4	10·29	87·3	

N. B.—The degrees refer to *Réaumur's* scale.—Regarding barometrical, ozonometrical observations, *vide* the Meteorological Report of the Voyage of the *Novara*.

Vocabulary of Nicobar-English words, translated from Commodore Steen Bille's "Beretning om Corvetten Galathea's Reiseomkring Jorden, 1845, 46 *or* 47."

THIS vocabulary has been translated from the Danish account of the voyage of His Danish Majesty's Ship *Galathea,* by M. A. de Roepstorff, an Extra Assistant on the Port Blair Establishment. It was originally compiled by the Roman Catholic Missionary M. Plaisant, who was stationed at one of the Nicobar Islands called Terressa. The Rev. Hanson, a member of the Danish Expedition of 1845, obtained a copy from a German, Dr. Philipps, which he took with him on the voyage, and made trial of the pronunciation at the places were he landed; he also added some words not found in M. Plaisant's list. M. de Roepstorff is naturally suspicious that, as the vocabulary was originally made out in French, then translated into German, again into Danish, and now into English, it may have suffered some detriment by these changes. The Port Blair Printing Press is also deficient in "accents," but M. de Roepstorff has done his best with the means at his disposal.

The chief portion of the vocabulary was prepared at Terressa, some words marked N were added at Nancowry, others at the Car-Nicobar, C-N.

H. MAN, *Colonel.*
Supdt., Port Blair and Nicobar.

A.

Aapn âaps,—to shut.
Ab, C-N,—boat.
Abhī,—from hence, yet.
Admoot,—reflect, think over.
Agh, N,—red.
Ahiét lebré C-N,—read.
Ahúhot,—ancestor, grandson.
Aïel C-N,—to count.
Aithji C-N,—belly, stomach.
Aíppe Ajùb,—smoke.
Ajelkūe C-N,—laugh.
Akah,—know, (Kit)-akah,—I don't know.
Akah-eang (eng iang),—understand.
Akapsēt,—light (a fire).
Akahe,—lukewarm.
Akhâte,—across.
Akatpoïté,—brain.
Akí,—morning.
Akí-akí,—sunrise.
(Nœn)-aki,—this morning.
Akhik,—make white, wash linen.
Akhik-tsiekité,—cleanse (in a spiritual sense).
Akhit,—aim.
Akhiot la mang,—imitate.
Akit,—scratch, scrape.
Akhui,—relative.
Alâm,—cheat.
(Hat alâm) (s. hatalang),—to resist.

A.

Along,—authorize.
Aluha,—divide, distribute.
Alôhie,—along.
Amhoïn,—warmth, heat.
Amm C-N, âhm N, hôm,—dog.
Am-umdjomeh N,—40.
Am-umdjomeh ruktei N,—50.
(Iang) amôk,—double.
Amé,—to rain.
(Ju tong) amé,—it rains.
Ané (œ),—he, him, she, they, this.
Ané-pāhé,—one (not numeral).
Anet,—anvil.
Angana, (ukênhje),—woman.
Aros,—rice (*Portuguese*).
Atam (adàm N),—evening, night.
Atavetsen,—never.
Athiēlke,— } worship,
Hatiēlme,— } or read
Athuāk,—burn, make black.
Athuéta nèn pàhê,—read.
Atlhāāt,—hedlāāt N—bracelet, ring.
Atmikihaï,—to obey.
(Hat tulan)-atse,—dishonest, untruthful.
(Karhû)-atse,—too much,
(Lhuhœhet)-atse,—honestly.
Aul, N,—black, blue.
Ave,—to go.

B.

Bahucœie,—weeping.
Baju,—one of mankind (the German der mensch).
Baju-ta-khioàho, N,—rich.
Bœó,—egg.

D.

Datjāāgelāh,—wreath of bast.
Dja (Schowra),—a cheek.
Dissô C-N,—white.
Djû-bajú, N,—man.
Dhjugār C-N,—drinking vessel of bamboo.
Drugmāt C-N,—eyebrows.
Dumlar C-N.—tumbler (English).

E.

Hahve C-N,—oil.
Eang,— hear.
Eang Schiâ,—leaf, flower, bough.
(Nkâ) eang ta schiâ,—cut boughs.
Efoa N,—clean.
Ehelme C-N,—nose.
Ehong, enaï,—shell.
Enrhui,—animal in shell, little animal.
Elkiumiat,—heart.
Elùm,—sigh.
Eng,—listen
Enhangnang C-N,—a watch.
Enmogne-kniniut, N,—button.
Eonang,—brother, cousin.
(Khuan)-Eonang,—nephew, niece.
Eonang-nkênhje,—niece.

F.

Fââ, fââ-fit,—wipe, sweep.
Fââb-dag N,—sweet water.
Fââb,—gape.
Fâ-kaiot,—tobacco.
Fââklet,—vapour.
Fhââ,—cut, hew, beat.
Fhââ khui, tam tinlok.— kill, murder.
Fhôt,—wretch, wretched.
(Wit) Fhôt,—to debase.
Fo,—to quiet.
Fô,—field, land.
Foan-umdjomeh N,—80.
Foan-umdjomeh-ruktei N,—90.
Fôlt,—open.
Foue, fen, fuan, foan,—4.
Fuat,—bite.
Fue-tôn,—40.
Fuongato,—forget, omit.
Fuhotet, Kumonklet,—pour.
Fuhōn (Fun C-N),—navel.
Fhuhœn,—shoot of a tree.
Fûrong,—pine-apple.

G.

Gadji N,—road (Danish, gade.)
Gadjovāthje N,—sister.
Galahaia N.—heaven.

G.

Garan N, karan,—iron.
Genâs N,—hand.
Ghahœ (Khaœt) N,—moon.
Ghantéra C-N,—flesh.
Ghēn net lopāh kā vi pāhé—speak evil of a man.
Ghēn kā vi pāhé,—report a man.
(Pāhé-ta)-ghen,—arbitrator, *e. i.*, man who speaks.
(Tsie)-ghēn,—letter, meaning.
Ginsa C-N,—(finger) nail.
Goœh, Koœ,—head.
Gôan N,—child.
Gon,—end, to end.
Gunhēēl C-N,—rasp.
Gundron C-N,—foot.

H.

Hâ,—cocoanut.
Hā hā,—a contract.
Hâa,—obtain.
Hàh N, haha,—yes.
H(k)adep, hēp,—to plant.
Hadija,—grandfather.
Hafet sang'n,—go on board.
Hae hœgne,—cry.
Haghi,—tomorrow.
Hahanong—pair.
Háheng,—wind.
(Vi khink)-haheng,—to air, make wind.
Hähé,—brother-in-law.
Hāhé,—happiness, happy.
Hahē,—alliance.
Hahē tin pahé,—allied to a person, amiable.
Hahē,—claim back.
Hahē,—ask.
Hahē-ten,—demand.
Hahea, harea,—see, look at.
Hat-hahea,—not see, blind, blindness.
Haheang,—muscle.
Hahehaœng,—gratefulness.
Hahehaœng, hathahang'n—price.
Haheha,—show.
Hāheham,—sight, view.
Habheurl, harol C-N,—hunt, shoot.
Hah'k,—a smell.
Hahek,—wave.
Hahahmang,—to rise.
Hahahram,—perish.
Hat-hehot, hatalang,—disapprove.
Hahehôk,—change, vary.
Hahem,—call.
Haheng sakalu,—strong wind.
Hahihalenma,—salam.
Hahnhaât,—grandmother, ancestors.
Hāhō,—pursue.
Hāhnâ,—sugar-cane.
Hahâā, hedwa N,—bamboo.
Hahâat,—nothing.
(Miki)-haïe,—be disobedient.

H.

Haiâam C-N,—fowl.
Hakté,—undermost, palm of hand, beneath.
Halep,—liver.
Haliet,—search.
Hamang,—axe.
Haming,—rain.
(Vi) Haming,—moisten.
(Ju-tong) amé,—it rains.
Hamôn,—nostril.
Hanang,—bladder.
Hanaschaleï N,—bottle.
Hanhangta,—begin.
Hanhangta-nœt,—beginning.
Hanhoume,—guard, keep.
Hōōa C-N,—cask of bamboo.
Harhēha,—shut up, paste up.
Harihulong C-N,—sorrowful.
Harâak,—calculate, to count, a measure.
Harâak kiong,—ship's cargo.
Haschoï N,—pot, pail.
Hat,—not.
Hat-hœn.—not this, no.
(Vi)-Hat,—destroy, annihilate.
Hāt,—absent.
Hatalāng,—refuse, disapprove, oppose.
Hâté,—duck.
Hâtel,—write.
Hatœicœh C-N,—work.
Hatenk,—pluck, peel.
Hātep,—box.
Hâtianan-tön,—20.
Hatielk, hatielmang, hadju,—bathe,
Hathanghah,—pay off.
Hathu,—poor.
Hatlēt,—never.
Hatmanghnhagn,—never.
Hatn'hâ,—temperance, sick fare.
Hātnâak,—food, nourishment, victuals, feast.
Hatâap,—some.
Hatulmi hathielke,—read.
(Lho)-hatse,—active.
Hawnhōlēt,—having up, sling.
Hé,—the mark of the present tense.
Heâgn (hœgn),—go, leave, go out, break up, move, loose, strew.
Heang,—some one.
Hehâ,—hiccup.
Heha,—rib.
Héet, hiesse C-N,—sneeze.
Hēhānē,—more, to grow, augment, multiply.
Héhāué lopœh,—better.
Hēhāuē-lopat-ivi,—to better.
Hēhang—metal.
Hēhang,—centre.
Hehang, hahiang,—rest, dwell.
Hehang, huleanga-pâhé,—companion.
Hehang, huleang,—accompany.
(Iang) hehe,—sometimes.

H.

Hehœie,—dig up a corpse.
Hehemōnk (iangamâak),—double.
Hehœm,—pulse.
Heheten,—tail.
Hehetsi,—to lessen.
Hœhia (hihia),—dust.
(Kamâpe) hehâahe, sea weed.
Hehjâ, nhjâ N, enau N,—areca-nut.
Hehok,—hair.
Hehomang,—esteem, wish.
Hehomang-ta-karhû,—ambition, avidity.
Hehomang-ta-râme khiâ,—desire after every tree, cupidity.
Hehōr,—much abundance.
Hehor khui,—several.
Hehōt,—order, according to, to wish.
(Hat)-hehōt,—disapprove.
Hehōt-hahea-ta-râme,—wish to see every one, curious.
Hehōt vetsen,—to consent, to agree to.
Hehōt vetsen,—consent, approval.
Heh't khiâ,—root.
Hehū,—black, dirty.
Hehum,—breathe.
Hehumé, hæhokre,—copulate, make pregnant.
He-kapèt,—fear of death.
Helang,—good.
Hæle,—take away.
Hellamong,—feast, festivity.
Hēm,—approach, come.
Hēm,—railed off place.
Hemæn,—near by.
Hēñ,—after.
Hēñ, tanhje,—warm, heat.
(Hunhang)-heng,—difficult.
Hæng,—meat, life, sound.
Hæn'he,—body.
Henhæl N,—flute.
Henghatâal,—to like.
Hetpati C-N,—sweep.
Hetsig'n,—immediately, incessantly.
Hî,—flower.
(Kūn)-hiâ,—why.
Hiāñ sang'n —enter.
Hibô,—plaintain.
Hibuga,—pisang.
Hiē,—this.
Hifū—boil.
Hifū-heū,—dirty black.
Hifū-mœt,—black.
Hihâé,—poor.
Hiheie, hahamang.—say, tell.
Hihia (hœhia),—dust.
Hahâai,—forbid, defend.
(Tan)-hihâai,—trangress.
Hisōsi, athielke,—worship.
Hilēē,—beat, punish.
Hiliang hilœang C-N,—thirst.
Himegn,—refuse.

H.

(Vi)-hinai-khui,—moisten.
Himâân,—ripe.
(Ivi)-himâan,—become ripe.
Hinhi,—interpreter.
Hiti, hité N,—laugh.
Hitiak, itœak N,—sleep.
(Nkō)-hitiak,—mat.
Hitiak-té,—to sleep.
Hituhaman,—pointed.
Hiu (hing),—our, ours.
Hiuk,—sun.
Hivi,—spirit, demon.
Hoatse,—straightforward, seeming, straight, virtue, to better.
Hoh'haugatsike,—hate, abhor, displease, disgust.
Hâai,—we.
(Hat)-hâai,—near by.
Hâahé,—gather, collect, unite.
Hâaht—yes.
Hâaik,—far off.
Hoinræ, C-N,—sit down.
Hohæng,—air.
Hok înæ,—firewood.
Hokté,—over, top of palm.
Hoie,—ascend.
Holhœhang'n,—abuse, missuse.
Homlaame,—gold, gild.
Honhe,—appetite, hunger.
Hâane,—in, inside.
Honhâame,—to reserve.
Hâat,—absent.
Hâat etâ,—elsewhere.
Hota,—to set, put.
Hotsiét,—descend.
Hotsiét pahé kamapet,—sink dead man, bury.
Hufæt,— we.
Huhato,—foliage.
Huhag'n,—of yore, in old days.
Huheñ,—before.
Huhehohé,—get drunk, drunk.
Huh'hœg'n,—liberate, break up, leave, move.
Hûh'hœg'nkœt,—lose the road.
Huheu,—rich.
Huhé, huhomi—make, work, create.
Huhi,—kill.
Huhiacœt,—amuse oneself, joke.
(Kâ)-huhiacœt—ornament.
Huhiôat C-N),—necklace.
(Nfâa)-huho,—dream.
Huhot,—fish.
Hūk,—hide, scale, leather, skin.
(Karhû)-huk—hunchback.
(La) huk,—outside.
Huk-hogn,—behind.
Huk-emat,—eyelashes.
Hukét, hukiét,—carry, receive, surprise, bring, seek, bring away, lift down, touch, catch.

H.

Hukét-ta-ieng-khiuk,—bring together in one spot, heap.
Hukèt-vim,—invite, call,
(Vi)-huk,—occupy.
Hukhâahe,—warm.
Huleang,—together, reciprocal partner, attendant.
Huleanga pāhè,—companion.
Hul'hu,—the fat.
Humbaidsa N,—little.
Hungi,—day.
Hunhang-heng,—difficult.
Hurōh,—low.
Hurohatse,—much.
Huruh,—a cover, to hatch.
Huro (En) hurohé,—secretly.
Hutœt.
Huveang,—cocoanut tree,
Hyhaho,—elder, eldest.
Hœang N,—1.
Hœang-hata N,—9.
Hœh't khiâ, —root,
Hœhé, tahœ,—vein.
Hœm,—garden.
Hœnāng,—shinbone.
Hœng,—since.
Hœng N,—day, sun.
Hœng,—live, life.
Hœnginein,— } 20
Hœm-umdgomeh N— }
Hœngsœ N,—come here.
Hœvret C-N,—8.

I.

Iaeang,—11.
Iak,—merchandise.
Iana, ianet.—occasion, if, as supposed, when.
Iang,—1.
Iang amôk,—double.
Iang hehe,—sometimes.
Iangnang,—100.
Iang-ta-ghēn,—word (a word spoken).
Iang-tôn,—11.
Iang-tôn-foue,—14
Iang-tôn tani,—15.
Iang-tôn-haha,—12.
Iang-tôn-luœ,—13.
Iatet,—go in, enter.
Iœt,—father.
Iœie,—mother.
Ikih-loœt,—sew.
Ilēnhe,—tie.
Imiang,—one, first.
Imiang-ti-emat,—one eyed.
Irat,—sharpen.
Itâ,—here.
Ivi,—become.
Ivihoātse,—order, decree.
Ivi himôn,—become ripe.
Ivi kopn'e,—become meagre.

J.

Jâpi C-N,—key.
Jâânge C-N,—descend.
Jenon,—cocoanut.
Jojolaid N,—bathe.
Ju-tong-amē,—it rains.

K.

Khâ,—fish.
Kâ huhiacœt,—ornament.
Kaâal,—boil
Khăit han,—then.
Khāœt (khuœt,)—when.
Kāecœt,—seldom.
Kaín'kiak,—cork.
Kafâai, kaiduma,—knife.
Kaiet,—father, old man.
(Laksi) kaiit,—bay.
(Fa)-kaiot,—tobacco.
Kahihot,—my friend.
Kaheha,—oar.
(Tikâat) kahehole,—cry, scream.
Kahia,—be confined, to abort.
Kahâak,—pigeon, turtledove.
Kahuhōke C-N,—swine.
Kâi,—road.
Kaiing, kejin,—ape.
Kaifit.—victuals.
(Tukan)-kaim,—carpenter.
Kalāā,—shell.
Kalet,—hard, strong, miserly.
Kalamā,—gait.
Kalhahōt,—sexual organs.
Kalot,—theft.
(Pāhé-ta) kalot,—thief.
Kolrān,—bone.
Kalhjâat,—character.
Kamamlœ,—ocean.
Kamāng,—citron.
Kamang-kalin,—orange (sweet citron).
Kamâpê-hehâahe,—rope.
Kamâpê-ta karhû,—an anchor rope.
Kamapœt,—death.
K (S) aminâat,—1,000 Feet.
Kamuin, kamōë N, fowl.
Kana-khiâ,—bud, shoot.
Kanâmē,—wick.
Kanhiong,—beverage, liquor.
Kanihēle-khui,—head pillow.
Kanâat-ta-pemetcheu,—knife.
Kantai (Little N),—sit down.
Kapœt,—to die, death.
Kapœt-iœt,—dead father, orphan.
Kapap,—waistcoat.
Kâp,—turtle.
Kaptan,—captain.
Karah,—whale, fish, fishhook.
Karaka,—parrot.
Karān,—worm.
Karhē,—quantity.
Karhē pāhé,—man's quantity, age.
Karhû,—much, abundant, abundance.
Karhù-viang,—thick-bellied.

K.

Karhû-huk,—hunchbacked.
Karhu-atse,—too much.
Karhû-khugtot,—strong heart, love.
Karhû tamoï,—strong fire.
Karûjé,—bow-net.
Kasson,—box (French.)
Kât,—voyage.
Kata,—under.
Katsi,—because.
Katsi-ka,—how.
Katsi-khui,—shave the head.
Katu C-N,—rest.
Kaviōt,—old.
Kavœ,—fall.
Kaveang'n, kavhehile,—reject.
Kœi,—road.
Khœt,—nest.
Kētē, kœt,—to give.
Keàtatû,—opening.
Kel, C-N,—arm.
Kerahiērē C-N,—go.
Kerebusse,—hat, turban.
Kerebusse-tēn-pamoin,—warhat.
Khiu,—I, my, mine.
Khiūhe,—our, ours.
Khiuh, t,—we.
Kheūi C-N,—hair.
Kiāālērē C-N,—get up.
Kiank-fô-nâat,—rage, burst of anger.
Kidjang N,—deaf.
Khihahœt,—shivering.
Khiak,—boil, evil, pain, to suffer.
Khiak (or djak)-al-khnī,—headache.
Khiak-viang,—pain in the stomach.
Khiâ,—tree, forest, path.
(Eang)-khiâ.—leaf, flower.
Khiâ-te-pemetscheu,—little tree, bush.
Khjiang,—have, possess.
Khiangsé,—law.
Kiarum,—needle.
Khianti (s) khiansi,—custom.
Kiattraï C-N,—mat.
Khien,—receive.
Kilap C-N,—neck.
Khinmunté,—finger joints.
(Hat ràate)-kiuhāie,—indefatigable.
Kinhji,—merchandise.
Kinlap-kinlôh,—bud.
Kinloht, kinlong, C-N,—ring.
Kinlôh,—dress.
Kinmeck,—key.
Kinpeu kanpâaeh,—amber.
Kinp(l)ōng-nang,—ear-ornament.
Kinlueh'si,—to swallow.
(Imiang)-kinlūehsi,—mouthful.
Kinfat,—cough.
Khinione,—child.
Khiniong,—boy.
Kiūsset,—sit down.
(Nphâ)-kinmœle,—tumbler.
Kintē,—bad humour.

K.

Kintheu khiâ,—song.
Kinvâh,—pampel-moss.
Kinvâi,—key.
Kiong,—high.
Kiong (S) tjiong,—ship.
Kiong invan,—man-of-war.
Kiong, kaling,—building.
Khiâa,—deep.
Kipsi,—to lessen.
Kirhi,—dagger, weapon, knife.
Kirhol,—curved, crooked.
Kissot,—nail (of hand).
Kistot,—sorrowful, anxious, melancholy, annoyance.
Kit-akah N,—don't know.
Khiuk,—place, town, room, where.
Khiuk-khiong—anchorage, place for ship, harbour.
Khiuk-khinion,—place for child, *i. e.*, craddle.
Khiuk-pamŏui,—place for war, *i. e.*, camp.
Khink-vhā,—pulse.
Khiu-knhjēē,—village, place for houses.
Khink-hivi,—churchyard, place for ghosts.
Khiuk titial,—dark place, cave.
Khiuk-tamâai (dhiuk folténe C-N),—place for fire, lamp.
Khiuk-sikiâ,—place for birds, bird's cage.
(Hat)-khiuka khiuka,—either, or.
Khium-neng,—bone, joint.
Kiuterœ C-N,—9.
Kivâie som,—to limp.
Khâa (nkâa,)—fall, crush.
Khoin, kontŁje N,—son-in-law.
Khor, kél, koâl N,—arm.
Khôva C-N,—spew.
Kâag' hâtōt,—piety, pity, heart.
Kâaghôt-hâhí (tin),—to love.
Kokmith jama N,—20.
Kōm,—bring, carry.
Kōm-ta-liap,—teach, *i. e.*, bring knowledge.
Kom-ta-akah,—experience, attention.
Komiahthje N,—father-in-law.
Komivi,—friend.
Khonghat, khunhje,—time, *i. e.*, one time, two times.
Kâat, kâag'n,—acid.
Kot, kogn mifae,—ear.
Kopn'e,—meagre.
(Ivi) kopn'e,—get meagre.
Kot monah N,—thigh.
Kovāāke C-N,—basket.
K ebō,—buffaloe.
Kūa, ki, kâa,—one another, some few.
Kuanghērē C-N,—wood, firewood.
Khua C-N,—face.
Khuan (gōan N),—child.
(Nkônhje)-khūan,—son-in-law.
Khuan-kamūin,—servant, adopted child, pupil.

K.

Khuan kamūin (gon haiōm),—chicken.
Khuan-eonang—niece.
Khuœn-mhœ,—lamb.
(Nron)-khui,—parasol.
Kuœt,—when.
Khui (goœh N),—head, population, top, over, on.
Khui-fô,—high land, mountain.
Khui-kaptan,—chief.
(Vi-hinâi)-khui,—moisten.
Khui-mēn,—bay.
Khui,—drive away.
Kuitlibré,—write.
(Fhâa)-khui,—murder.
Khugtot (S) khaughătot,—heart.
Kuhihu,—fist.
Kuikanān, kuikelmone N,—knee.
Kuluām,—plantain.
Kum,—find.
Kumhje,—father-in-law.
Kum't,—mouse, rat, rabbit.
Kun'hœhie,—move.
Kun, ki, kô,—who, which, (Acc kun, ka).
Kun, ki, kô,—what, (Acc kun, ka).
Kun tsie,—wherefore, why.
Kunmenta,—pepper.
Kunté C-N,—little finger.
Kūntot,—business.
Kunvi kunhuhomi,—make, work, business
Kuping,—yams.
Kuping-kaliu,—sweet potatoes.
Kurian, karian N,—pot.
Knsang'n',—go, walk.
Kuchi ki,—precious, sweet, lovely.
Kutuhœ, —move, stir.
Kuvé,—pour.
Kœt,—hole.
(Huh'hœg'n) kœt,—lose one's way.

L.

La,—O.
Lā,—half.
Lāāl C-N,—egg.
La-én-tāt, —natural.
Ladije,—evening.
Lafôr,—north.
Lanient,— to be heavy.
(Hat) lanient,—not heavy, light.
Lâ-huk,—the back.
La-hûk,—out-side.
Lahuhōt,—matter in a boil.
Lakapah or kapah,—west.
Laksi-kaiit,—bay.
Luluh't,—mob.
Laming,—a pack.
Lampolei,—shower of rain.
Lang,—lustful.
Lanet,—chalk.
Langhapa,—north-west.
L'hag'n,—forget.
Lēt,—end, to end.

L.

L'hæt-tamsí,—candlestick.
L'hœt-pulô,—thigh.
Letng,—never.
Lenku,—earthquake.
Liap,—know, able.
(Ta)-liap,—knowledge, art.
(Hat)-liap,—be ignorant, ignorant.
Liap-(tān-râme),—(towards every one), expert.
(Kom-ta)-liap,—bring knowledge, teach.
L'hiang,—name, to name.
Lhi khūi.
Lioune kaæ C-N.
Libré,—nosegay.
Lindrijen C-N.—bow.
Locœh, luæh N,—3.
Loæ-umdjomeh N,—60.
Loæh-umdjomeh-ruktei N,—70.
Loæt, loæ N,—cloth, linen.
Loætva,—red cloth.
(Ikih)-loæt,—to sow (with needle).
Lhâak,—agreeable, expensive, good, admirable, wonder.
Loka-nang, laloke-ko-nang N,—hole in the year.
Long,—feast.
L'hôp C-N,—hunger.
Lopah,—well, good, fine.
Lopat-makmet,—pretty.
(Hat)-lopah N,—not good, bad conscience.
L'hohtāse,—active.
L'hōlevi,—be expert.
L'hōrmang,—assist, help.
L'hôm,—poor.
Longhâat,—white cloth.
Loto, lōet,—quick.
Lhotksi,—remove.
Lotohiâala,—right hand.
Luæhman,—triangle.
Luæhkinnhji N,—30.
L'huhæhet,—right (not left).
L'huhæhet atse,—honesty.
Lupā,—flesh.
Lækimâan.—thigh.

M.

Má,—thou, thee, you.
Mãe C-N,—ocean.
Mâhâa,—half raw.
Mahehâat,—food.
Māik'e,—oil.
Māk C-N,—water.
Mākā,—soon.
(Nēu)-maka,—present at.
Mâke,—brilliant, splendid.
Mhakti,—arm.
Maleng,—worm.
Mâm C-N,—blood.
Man,—hook.
Manam,—milk.
M ang,—the end, frame, boundary, top.

M.

Mhang,—nose.
Māngœ,—stone.
Manjak,—wax.
Manâat,—new-moon.
Matahœt,—earth. village, island, world.
Matāhœt-ta-karhû,—big island, main land.
Meang,—cat.
Meïk,—lightning, splendour.
Mehâahet,—spirit, soul.
Mēn,—thou, thee, thine, you.
Mēng,—your, yours.
Mhœne,—custom.
Mhïn (mhantjé N),—stick.
Menam,—wrath, anger.
Menūa, manoing N,—lip.
Mēt,—face.
(Hifu)-mœt,—black.
Metām,—prey, exchange, lend, borrow, use pretext.
Meul't,—let one's water.
Meut,—you, thou, thee.
Mifāœ,—to walk.
Mifaie,—hawk.
Miki-haie,—be disobedient.
Milœt,—middle.
Mineōle,—nonsensical man.
Miniœije,—the little finger.
Minhonn'he,—to lie, a lie.
Minlūēnĕ,—priest, prophet.
Minrūa,—thumb.
Mioajah, mifhouäia,—heaven.
Mischiana C N,—bird.
(Vi)-missâ,—celebrate (Latin).
Mitāë,—cheat, lie, swear false.
Mitāë hat lopah, (lie not good) *i. e.*, slander.
Mitœk,—short.
Mivi,—friend.
Moāh N,—nose.
Molâat,—necklace.
Monoï, manoing (Schowra) menō N,—mouth.
Moronkâ,—pipe.
Muite,—sweet.
Mulòhe,—sort.
Munté, mukté, gunté N,—hand.
Mœ, mœn,—thou, thee, thy, you.
Mhæaram, (Khuan)-mhæ, } —lamb.

N.

(Té)-nam,—balance to good.
Nan,—one.
Nang,—oar.
Nàt N,—not.
Nehang,—fat.
Nehaurle,—weapon.
Neheurle,—flute.
Nœg,—you, thou, thee.
Nehōŭĕ,—middle.

N.

Nehang-nang,—watch.
Nēn-maka,—present at.
Nēne,—point out.
Neōle,—stammer, speak nonsense.
Nœt-hœt-umang,—some one.
Nœt.—neither.
Nfārē,—wing.
Nfhâ,—stroke, cut.
Nphê,—live, dwell, rest, await, immoveable.
(Hat)-rôatk-nphô,—inconstant.
Nphé-ta-khiuk-hivi,—stop in the place of the spirit, *i. e.*, condemn.
Nphâ-kinmœle,—tumbler.
Nfâa,—blow, puff.
Nfâa-hūho,—a dream.
Nfoon, ónfoan N,—8.
Nghâat,—cocoanut tree.
Nghēn,—announce.
Nghong,—burn.
Nghoik,—craddle, shake.
Nhangatâat,—reign.
Nheōle-vi, te,—cause.
(Hat) nheōle,—mute, dumb.
(Hat)-nhin,—fine, delicate.
Nhia C-N,—child.
Nhjēe, nji,—house.
Nhiong,—drink.
Njun N,—moustaches.
Nhoi N,—beard.
Nkenēt.—sit down.
Nká,-eang-ta-khiâ,—cut boughs off.
Nk (*i*) ênhje, nkanhje,—wife.
Nkênhje-khuan,—daughter, daughter-in-law.
Nknêhje-manam,—wet-nurse.
Nkînhje,—pap, wicked step-mother.
Nkeune-ntān,—carry.
Nkēime C-N,—to have.
Nkô,—bark.
Nkho-hitiak,—bast to sleep on, *i. e.*, mat.
Nkonhje—boy, human being, man, husband.
Nkhâa,—crush.
Nlānhje,—ocean.
Nlēn,—*fortify, make fast, tie, rail, gird, surround, press, shut.*
Nliôn,—*ocean, sea.*
Nlông,—*neck.*
Nlong hâ,—cocoanut, (prepare one.)
Nlong tê,—empty cocoanut.
Nmanhje,—beard.
Nmænhje,—captain, old.
Nâale,—green, blue, blue cloth.
Nōle,—thorn.
Npôn res,—rump.
Nreng'n tsie,—else, other thing, difference.
Nrōng, khūi,—*umbrella.*
Nrongkté,—give.

N.

Nsie,—to grub.
Ntâ,—cease.
Ntânhje,—basket.
Ntap,—liver
Ntâak,—antler (Danish tak).
Ntsang,—boil
Ntsie-hæn,—(as this), to accustom.
Næng N,—here.
Nhæng, næn,—she, him, this.
Næn hœng, nœnhœ hœng N,—this day, to-day.
Nœn-akî,—this morning.

O.

Oân N,—throw up.
Oaydna N,—hunger,
Oh,—O
Oh, œh, âh N,—2.
Ok C-N,—back.
Olmat C-N,—eye,—oalmang (plural).
Omnan,—how much.
Omnéan,—who many.
Oljoala C-N,—to answer.
Op.—discover.
Oplâap.—to sleep, a sleep.
Opt (1) âap,—tobacco.

P.

Pahé,—man.
Pāhe-ta-ghēn,—umpire (man to speak.)
Pāhé-kamapæt,—dead man, corpse.
(Hat)-pāhe,—not man, *i. e.*, animal.
Pahāt,—fear, make afraid.
Pahāt-pāhé,—insanity.
Pahia,—moist.
Pahōhi,—to rot.
Païju,—oar.
Pâit,—snake.
Paivâat,—eel.
Pala,—fire.
Pāle,—ball.
Pâlé-ta-karhû,—big ball, cannon-ball.
Pamoiñ,—fight, war, enclose, blockade.
(Vi)-pamoin,—to fight.
Pap,—father, uncle.
Para,—silver.
Pataxi,—break, crush.
Patu-ta-lopāh,—the pretty stone, marble.
Patu-ta-karhû,—rock, big stone.
Patre-ta-kinhji,—merchant.
Peâ,—shear the hair, peal.
Peitæt,—little.
Peitæ-ivi,—make short.
Pehang-khiâ,—to saw.
Pekū C-N,—orange.
Pengatt,—forget.
Piæt,—clay.
Pimetscheu,—little.
Pipa,—cask, ton, (Portuguese).
Pâat,—ugly.
Prata,—copper, lead.

P.

Pu,—also.
Pulo,—island (*Malay*).
Pun, pu,—with regard to.
Pujœt-anœ N,—sit down you.
Pūron,—lead.
Pūrhon, pārhon C-N,—rope.
Purhon-ta-karhu,—anchor rope.
Pœ,—clearness, light.
Pæite.

R.

Raē.—canoe.
Rāe,—leaf.
Rhâgne, rhigne,—run.
Rākn,—crush, break.
Rhamang,—danger, fear.
(Hat)-rhamang,—dare.
Râme-khiuk,—every place, here and there.
Râme pāhé,—every one, man.
Rhâne, rhæne,—escape.
Râva C-N,—no, not.
Reak,—water.
Reaksnāñ,—rich on water.
Reaktsi,—hew off.
Reankiang,—elbow.
Renable,—shoe, slipper.
Renâam,—hammer.
Renâang,—full moon.
Renâant,—plaster, medicine.
Reugk,—arrive, come.
Rhaâtk, rhâalke,—surely, truly.
Rhaâtk-ghēn,—tell for certain, assure,
Rhâam,—make flat.
Râatk,—be able to.
Râatk-kapœt,—mortal.
Râatk-ivi,—possible, easy to make.
Râatk-ane,—able to.
(Hat)-râatk-nphe,—inconstant.
(Hat)-râatk-kapœt,—immortal.
(Hat)-râatk,—impossible.
(Hat)-râatk-kinhāie,—indefatigable.
Rhônk,—grow.
Rûë, rôë, rûœ N,—boat.
Rûhe.—shadow.
Ruhēñ,—oar, to sail.

S.

Sa,—once.
Sabola,—onion (*Portuguese*).
Sâht,—give back, return year.
Sahuat,—throw up.
Sakalōt,—red, red cloth.
Sakalī,—strong wind.
Sakalū,—strong.
Sakiāh,—brown. red.
Sakīt,—sick, sickness.
Sakit-pahōhi,—sick, rotten.
Sak'n,—uncertain.
(Hat)-sak'n,—perhaps.
Salōt,—round, circle.
Sam N,—10.
Sam-hœn'g N,—11.

S.

Sam-ôh, âh N,—12.
Sam-luæh, loæh N,—13.
Sam-foan, N,—14.
Sam-tanein N,—15.
Sam-tafūel N,—16.
Sam-is'at N,—17.
Sam-onfoan (anfoan) N,—18.
Sam-hœang-hātā N,—19.
Samiū (e),—dagger.
Saminiūs, sāht,—year.
Samōñg,—1,000.
S (k) aminâat,—1,000 feet.
Sanam,—spoon.
Sanam,-nāñg,—ear, spoon.
Sanam-kanâp,—tooth-pick.
Sanam kaveang'nfi sanumpté,—anchor.
Sanlua,—hook.
Sapēu,—hat.
Schankal C-N,—thing to carry water over the shoulder on.
Schap,—answer.
Schœh't,—the day after to-morrow.
Sehia,—exchange.
Sekong,—elbow.
Setum,—box.
Sethj, C-N,—wash.
Si N,—flower.
Siap,—to instruct.
Siægn,—long time.
Sikiâ,—bird.
Sinâah,—horn.
Sittam C-N,—fireplace.
Som, son,—10.
Som-khinnhji,—(10 by 10) *i. e.*, 100.
Sukri—sugar (*Portuguese.)*
Sum,—man, people.
Sūm,—to brush.
Sumtschia,—Chinese.

T.

Ta,—one of the articles.
Tâ, thae C-N,—breast, breast-nipple.
Toaūge C-N,—cocoanut tree.
Tāé-mattāe C-N,—came, (past tense.)
Ta-nhjēē,—by.
Tafahole, tahæœ C-N,—skin.
Tahang.—fat.
Tahœi C-N,—present at.
Tahihaal,—cloud.
Tahia, tahjâ C-N, tahiâal C-N,—ladder staircase.
Tahōñg,—tobacco.
Tahulā,—yams.
Taki, takūi, taghi, N,—to-morrow.
Talomme C N,—cigar.
Tām N,—backside, back.
Tamâaï, tamia, C-N, tamoaiê,—fire, coals.
Tan hihaai,—exceed, transgress.
Tani, tanein C-N,—5.
Tani-tón,—(5 times 10) *i. e.*, 50.
Tanikinnhji N,—60.

T.

Tanein-umdjomeh,—(5 times 20) *i. e.*, 100.
Tanhje,—warm
Tahnihœtsen,—gift, sacrifice, favor.
Tanjôgua C-N,—plantain.
Tanâan khuī,—turban.
Tapoa C-N,—the cheek.
Tarām,—wine, arrack, liquor.
Ta-râme,—every one.
Ta-râme-khiuk,—all places, everywhere.
Taring,—channel.
Tavaâte C-N,—pearl.
Tacœ,—flight (of birds), fly.
Te,—make, put.
Telâat,—ant.
Tēñ, tīn,—that, lest, towards.
Teñ,—mother.
Tēñ mela,—looking-glass.
Tenam,—surplus.
Tœt, theunghatœt,—complete.
Tethâat,—enough.
Theûñ,—arrive, reach.
Thin,—go.
Thiudi-okei,—carry thee back, go.
Thâap C-N,—appetite.
Thjajas N,—deep.
Tikâat, tekâat, thekakh raare C-N,—sing.
Tikâat kahehâale,—scream.
Timlŏk,—lance.
Tin-lap-nhjee,—before the house.
Tinéang-khiâ,—to saw.
Tingjohu N,—white.
Tingœt C-N,—moon.
Titial,—dark.
Tohiœn-até } washing.
Tohiœki-te } bathing.
Táak (e),—pull, draw.
Tâakne,—tear asunder.
Tolœt,—hew to pieces, divide.
Tôt,—heart.
Ta-en-tôt,—naturally.
Tsang,—voyage, follow.
Tschah,—tea.
Tsang-kji,—my, mine.
Tsang-mœ,—yours.
Tschalling,—long.
Tschjanœ N,—lance.
Tschu,—pure.
Tschu-khugtôt,—chastity.
Tschi,—old.
Tsi,—nature.

T.

Tsiang,—sweet, good.
(Hat)-tsiang,—wicked, sour, bitter.
Tsie,—like, sort.
Tsie hœn,—self.
(N)tisi hœn,—accustom.
Tsie-nœn,—as this.
Tsie-ânœ,—as this, as much as.
Tsie-ghĕn,—(like word), meaning, letter.
(Kūn)-tsie,—why.
(Vi-ta)-tsie,—to observe.
Tsiekité,—cleanness.
Tsiekitē-sethj C-N,—wash the hands.
Tsieki-viang,—clean (the stomach).
(Akhīk)-tsie kité,—clean (spiritually).
Tsihé,—from hence, future.
Tsigamāng,—fall on the knees.
Tsio-matahœt,—coast.
Tui,—kill.
Tukan-kaim,—carpenter.
Tuktei-hœng, umdjomeh-tuktei N,—30.
Tulan,—just, good.
(Hat)-tulan (atse),—unjust, indecent, dishonest, rascal.
(Hat)-tulan-tēn-pāhé,—not just to a man to offend.

U.

Ud N,—kill.
Uhehâa,—raw.
Umag N,—fire-place.
Ungha,—eat.
Unschongha N,—to go.
Uschthân,—bell.

V.

Vhâ vhoâ N,—blood.
(Khiuk)-vhâ,—pulse.
Vathâat,—value.
Vetseng,—like to.
(Hata)-vetseng,—according to.
(Hat-ghēn)-vetsen,—(not tell as) deny.
(Hehōt)-vetsen,—to agree, to consent, a consent.
Vetsen,—enough.
Vi, vihuk,—make, employ.
Vi-pamoiñ,—fight.
Vi-khiuk hahéng,—air out (make place).
Viam,—stomach, belly.
(Hukét) vim,—to invite, call.

Note on the Language of the Nicobarians.—By V. BALL, ESQ.

DURING the short period of my stay in the Nicobars, I did not attempt any investigations regarding the language, as I did not intend to enter upon a subject to which, from want of a knowledge of Malay, or the services of an efficient interpreter, I felt I could not do justice. Since my return to Calcutta, however, I have found that the five published vocabularies of the language spoken at Nancowry and the adjoining islands supplement each other's deficiencies to such an extent that, by comparison, a very complete vocabulary can be obtained.

Unfortunately, reference cannot be made to a vocabulary which is said to have been published by the French Missionaries who resided on the Island of Terresa.

In preparing this compilation I have had two objects in view,—

First.—To supply a basis, which will render it comparatively easy for any of the officers engaged at the Nicobars to prepare a full and correct list of words.

Secondly.—To facilitate a comparison being made between this language and the languages of the various islands of the Malayan Archipelago, and so to trace, if possible, the origin of the Nicobarian race.

I have already compared this list with the 117 words in 33 languages of the Malay Archipelago collected and arranged by Mr. Wallace.*

The result has been to show that the Nicobarian language is distinct from all the others. The following examples would seem to show, however, that there may be a remote connection :—

ENGLISH.	NICOBARIAN.	1 MYSOL.
Dog	Ham or Am	Yem
House	Nji or Nee	De
Hand	Kaneetay	Kanin
Nail	Kaischna	Kasebo
		2 BOUTON
Mother	Chia Enchana	Inana
Tongue	Kalelak	Lilah
		3 TIDOR
Skin	Ihe	A'hi
Water	Dak or Rak	Aki
		4 GORAM, &c.
Fire	Eeohay	Hai

The vocabulary herewith published well illustrates the necessity of adopting some rigid system of transliteration. In several cases, the five authors have spelt the same word in four or five different ways. *e. g.*, House—*Gni, Hnee, Nji, Njee, Nee.* Woman—*Encáná, Ungcan. Angana, Engkana.* Cocoanut—*Hoat, Gnhuat, Gnoatt, Gnoat,* and others,

* The Malay Archipelago, Vol. II., Appendix.

In some cases the words used by the different authors are so obviously different, that it seems probable that there has been some mistake, *e. g.*, Beard—*Hignoughn, Boyalkiah, Inhoing*. Hair—*Enchojon, Inkoi, Jogh, Yoo ock*. Knife—*Henatkoa, Moah, Kuhanap, Innoette, &c.* It will be a matter of no great difficulty to every one on the spot who may now undertake the preparation of a revised vocabulary to ascertain the causes of these differences, and make the necessary corrections.

Vocabulary of the Language spoken in the Central Nicobar Islands.

English.	Fontana, 1795.	Barbe, 1846.	Rink, 1847.	Novara, 1862.	Man, 1869.
All	.....	.....	.....	Oomtóhm.	.....
Ambergris	.....	Kampei	.....	.....	.....
Another	.....	.....	.....	.....	Deeoh.
Arm	Choal	.....	.....	Koal	Koall.
Arrow	.....	.....	.....	Bel	.....
Ape	.....	.....	.....	Dooaeen Kaeen	.....
Axe	.....	.....	.....	Enloin	.....
Back	Och	.....	.....	.....	.....
Bad	.....	.....	.....	Hadlapa	.....
Banana	.....	.....	.....	Hiboo	.....
Beard	Hignoughn	Boyalkiah	.....	Inhoing	.....
Beautiful	.....	.....	.....	Lapoa	.....
Belly	Uhian	Uhian	.....	Wiuang	.....
Betelnut	Heja	.....	.....	Hakayee	.....
Do. leaf	Achœ	.....	.....	Aray	.....
Big	.....	.....	.....	.....	Karup.
Bird	.....	.....	.....	Sitchna	.....
Bird's nest	Inlegne	Akai	.....	.....	.....
Black	Thanula	.....	.....	Oeel	.....
Blue	.....	.....	.....	Tchoengoa	.....
Blood	.....	.....	.....	Wooah	.....
Boat	.....	.....	Dua	Dëna	Dooey.
Body	.....	.....	.....	Okaha	Olendie.
Bone	.....	.....	.....	Ung-ejing	.....
Boot	.....	.....	.....	.....	Supatra.
Bow	.....	.....	.....	Donna	.....
Boy	.....	.....	.....	Kanioom	.....
Bracelet	Halhat	.....	.....	.....	.....
Brass	.....	.....	.....	Kalahaee	.....

Vocabulary of the Language spoken in the Central Nicobar Islands—contd.

English.	Fontana, 1795.	Barbe, 1846.	Rink, 1847.	Novara, 1862.	Man, 1869.
Bread	.....	.....	.....	Puang.*	.....
Breast	Tha	.....	.....	Alendaja	.....
Breeches	Hänhä	.....	.....	.....	.....
Brother	.....	.....	.....	Tschao-anyana	.....
Calf (of leg) ...	.....	.....	.....	Kanmoana	.....
Calm	Gnam	.....	.....	.....	.....
Cane	Nat	.....	.....	.....	.....
Cannon	.....	.....	.....	Hin-waw	.....
Canoe	*See* Boat		.....	.....	.....
Cat	Cochin†	.....	.....	.....	.....
Chain	.....	.....	.....	Malao	.....
Chair	Henpojou	.....	.....	.....	.....
Cheek	.....	.....	.....	Tapoah	.....
Chest	Aptejo	.....	.....	.....	.....
Chief	.....	.....	.....	Oomiah-mattai	.....
Child	Chegnoun	.....	.....	.....	Kainyoon.
Chin	Incaougn	Inknan	.....	Enkoin	Ung koin.
Cigar	.....	.....	.....	.....	Engmohay.
Cloth	Lhoe	.....	.....	.....	.....
Do. strip of ...	Lanoa	.....	.....	.....	.....
Clouds	.....	.....	.....	Galahaya	.....
Coat	Chanlo	.....	.....	.....	.....
Cocoanut	Hoat	Gnhuat	.....	Gnoatt	Gnoat.
Do. green ...	Gninoo	.....	Jenong	Njaoo	.....
Do. tree ...	.....	.....	.....	Oocejaoo	Ohnahut.
Cock	.....	.....	.....	Kamooe-koep	.....
Cold	.....	.....	.....	Kaay	.....
Coral Chalk ...	.....	.....	.....	Shónn	.....
Darkness ...	.....	.....	.....	Doochool	.....
Daughter	.....	.....	.....	Karnoom-anyana	.....
Day	.....	.....	.....	Heng	.....
Daylight	Tensagi	.....	.....	.....	.....
Dead	Lhaha	.....	.....	Kapa	.....
Devil	Hivi	Hivee	.....	Eeweé	.....
Distant	.....	.....	.....	Hoee	.....

* Portuguese Pan. † Malay.

Vocabulary of the Language spoken in the Central Nicobar Islands—contd.

English.	Fontana, 1795.	Barbe, 1846.	Rink, 1862.	Novara, 1862.	Man, 1869.
Doctor	.....	.....	.....	Manlooena	.....
Dog	Ham	.....	.....	Ahm	Am.
Dollar	Para	.....	.....	.....	.....
EAR	Nann	Nan	.....	Neng	Nang.
Earrings	.....	.....	.....	Itiei	.....
Earth	.....	.....	.....	Oal-mattai	.....
East	.....	.....	.....	Hash-fooly	.....
Ebb (tide)	.....	.....	.....	Tchoh	.....
Egg	Ohia	.....	.....	Hooeja	Ooyah.
Elbow	.....	.....	.....	.....	Ingon Koyang.
Enough	Pisi	.....	.....	.....	.....
Evening	Sciasin	.....	.....	Ladiaya	Hatam.
Eye	Holmat	Olmat	.....	Oal-mat	Erecmati.
Eye-brows	.....	.....	.....	Ok-mat	Okmat.
Eye-lash	.....	.....	.....	.....	Kut fight.
FACE	.....	.....	.....	Matsehaka	.....
Farewell	Kalakala-younde	.....	.....	.....	.....
Father	Chia	.....	.....	.....	.....
Feather	.....	.....	.....	Anet-layeebery	.....
Finger	Kinitay	.....	.....	Kani-tai	.....
Fire	Henoe	Hahoha	.....	Hioye	Eeohay.
Fish	Cha	.....	.....	Gah	Kah.
Flesh	.....	.....	.....	Okaooha	.....
Flint	.....	.....	.....	Hindel	.....
Flood	.....	.....	.....	Hayjaoo	.....
Flute	.....	.....	.....	Hinhell	.....
Fly	.....	.....	.....	Jooay	.....
Foot	.....	Huphala	.....	Lal	.....
Forehead	Lal	Lail	.....	Lal	.....
Fowl	.....	.....	.....	.....	Komoy.
Friend	.....	.....	.....	Jol	.....
GIRL	.....	Vlah	.....	.....	.....
Gold	Emloum	.....	.....	.....	.....
Good	Lapoa	.....	.....	Lapow	.....
Grandfather ...	Croum	.....	.....	.....	.....
Grass	.....	.....	.....	Oobjóoab	Sin.

Vocabulary of the Language spoken in the Central Nicobar Islands—contd.

English.	Fontana, 1795.	Barbe, 1846.	Rink, 1862.	Novara, 1862.	Man, 1869.
Great	Charou	.....	.....	.....	.....
Green	.....	.....	.....	Tchongoa	.....
Gun	.....	.....	.....	.....	Endil.
HAIR	Enchejon	Inkoi	.....	Jogh	Yoo-ock.
Hand	Kinitay	Kanathoi	.....	Oktai	Kaneetay.
Handkerchief* ...	Lenzo	.....	.....	.....	.....
Hat*	Chapeo	.....	.....	.....	.....
Hatchet	.....	.....	.....	Enloin	.....
Head	Choi	Koi	Coa	Góeh	Kocee.
Headache	.....	.....	.....	.....	Chiak Koey.
Heart	.....	.....	.....	Kioyen	.....
Heaven	.....	.....	.....	Oal, galahaja	.....
Hen	Tassoach	.....	.....	Kon-Kamooe	.....
Here	.....	.....	.....	.....	Ecta.
Hill	.....	.....	.....	Kohinjuan	.....
Hog	Not	.....	.....	.....	.....
House	Gni	Hnee	Nji	Njee	Nee.
IRON	Caran	.....	.....	Kadao	.....
Island	.....	.....	.....	Poolgna	.....
JAR	.....	.....	.....	.....	Oorat.
KETTLE	.....	.....	.....	Poonhagna	.....
Knee	Colcanon	.....	.....	Kohánoang	Kokanany.
Knife	Henathoa	.....	Moah	Kahanap	Innoette.
Key	.....	.....	.....	Tenooan	.....
LAD	.....	.....	.....	Iluh	.....
Land	.....	.....	.....	Oal Mattai	.....
Large	.....	.....	.....	Kadoo	.....
Lead	Luva	.....	.....	.....	.....
Leaf	.....	.....	.....	Da-unjeeha	.....
Leg	Hanhan	Anhnan	.....	.....	Lah.
Lemon	Carrova	.....	.....	.....	.....
Lightning	.....	.....	.....	Mait	.....
Lime	Cion	.....	.....	.....	.....
Lips	Manonge	Mahnoey	.....	.....	.....

* Of Portuguese origin.

Vocabulary of the Language spoken in the Central Nicobar Islands—contd.

English.	Fontana, 1795.	Barbe, 1846.	Rink, 1847.	Novara, 1862.	Man, 1869.
Little	.....	.....	.....	.....	Ompein.
Living	.....	.....	.....	Ahn	.....
Man	Encognee	Inconhay	Baju	Bhaju	Engkoin.
Do. old	.....	.....	.....	Angouje	.....
Do. young ...	.....	Maiai	.....	.....	.....
Medicine	Danon	.....	.....	.....	.....
Moon	Chae	Khaha	.....	Kahae	Kahair.
More	.....	.....	.....	.....	Pelarie.
Morning	.....	.....	.....	Hagée	Heing Haki.
Mosquito	.....	.....	.....	Mrhoja	.....
Mother	Chia Enchana	.....	.....	Schia Angána	.....
Mouth	.....	.....	.....	Manoing	Elefuan.
Much	.....	.....	.....	Ootohatche	.....
Musket	Hendel	.....	.....	.....	.....
Nail	Ciscoa	.....	.....	Kaischua	.....
Name	.....	.....	.....	Lermay	.....
Navel	Foun	.....	.....	Fon	.....
Near	.....	.....	.....	Meayhoa	.....
Neck	Halikolala	Kolalah	.....	Unlonga	.....
Needle	Needle	.....	.....	.....	.....
Nest	.....	.....	.....	.....	.....
Night	Hatahom	.....	.....	Hatam	.....
No	At-chiou	.....	.....	Ooat	.....
Noon	Kamhen	.....	.....	.....	.....
North	.....	.....	.....	Hash-kapa	.....
Nose	Moha	Moi	.....	Moah	Moahn.
Old	.....	.....	.....	Boomooashe and Oomiaha	.....
Palm-wine	.....	.....	.....	Doagh	.....
Pandanus	.....	.....	.....	Larohm	Lagomb.
Paper	.....	.....	.....	Laeeberi	.....
Parrot	Cattoch	.....	.....	Katok	.....
Pig (hog)	Not	.....	.....	Not	Gnot.
Pine-apple	.....	.....	.....	.....	Soodoo.
Pipe	Tanop	.....	.....	.....	.....
Pipe (whistle) ...	.....	.....	.....	Tanop.	.....

Vocabulary of the Language spoken in the Central Nicobar Islands—contd.

English.	Fontana, 1746.	Barbe, 1846.	Rink, 1847.	Novara, 1862.	Man, 1869.
Plantain	.....	.....	Hibuga	.....	Heeboo.
Pretty	.....	.....	.....	Lapoa.	.....
RAIN	.....	.....	.....	Ama	Amee.
Rattan	Pantan	.....	... ..	.....	.....
Red	Chunla	.....	.....	Ak	.....
Red Coral	.....	.....	.....	.....	Iang mary.
Rice	.....	Aroos	.....	.....	.....
River	.....	.....	.....	Hiajarak	.....
Rudder	.....	.....	.....	{Deunde / Dol deua}	.....
SAND	.....	.....	.....	Pée èt	.....
Sea	.....	Kahmala	Kamamla	Oal-kamaleh	Komalei.
Ship	.....	.....	Tjiong	.....	Cheong.
—— (large)	.....	.....	.....	.....	Lagam.
Shirt	Chanlo	.....	.....	.. ...	.....
Shoes	Dhanapola	.....	.....	Zapatos*	.....
Shot	.....	.....	.....	Hadeel	.....
Shoulders	Eekait	.....	.....	.....	.....
Sick	Tohon	.....	.....	.....	.....
Skin	.....	.....	.....	Ihe	.....
Small	Mombeschi	.....	Humbartsja	Paeetya	.....
Snake	.....	.....	.....	Toolan	.....
Sole (of foot)... ...	.....	.....	.....	.....	Ollah.
Son	Covon	.....	.....	.....	.....
South	.....	.....	.....	Hash-lèhhna	.....
Star	.....	Lomalay	.....	Shokmaleicha	.....
Stone	.....	.....	Manga	Mangèh	Mangeh.
Stockings	Han ho-lola	.....	.....	.....	.....
Striped cloths ...	Cambalamagn	.....	.....	.....	.....
Strong	Koan	.....	.....	Koang	.....
Summer	.....	.....	.....	.....	Kol Kapa (N. E. Monsoon.)
Sun	Hen	Han	.....	Heng	Alakei.
TABLE	Cherachà	.....	.....	.....	.....
Teeth	.....	Kanap	.....	Kanáp	Kanap.
There	.....	.....	.....	.....	Matareo.
Thigh	Poto	Bhoolo	.....	Boolo	Buloh.

* Corruption of Portuguese.

Vocabulary of the Language spoken in the Central Nicobar Islands—contd.

English.	Fontana, 1795.	Barbe, 1846.	Rink, 1847.	Novara, 1862.	Man, 1869.
Throat	.....	.....	.....	Ungnoka	Kolalla.
Thunder	.....	.....	.....	Koomtoogna	.....
Tipsy	.....	.....	.....	.....	Ooy ooay.
Tobacco	.....	.....	.....	Oomhoi	.....
To-day	.....	.....	.....	Lenheng	.....
Toe	.....	.....	.....	Kanech-lah, ok lah	.....
To-morrow	Holactas	.....	.....	Hakayee	.....
Tongue	Caleta	Kealatat	.....	Kaletag	Kalolak.
Tortoise-shell	Cap	.....	.....	.....	.....
Tree	.....	.....	.....	Koy-unjecha	.....
UGLY	.....	.....	.....	Jooh	.....
Uncle	Ochia	.....	.....	.....	.....
VALLEY	.....	.....	.....	Alhoda	.....
Village	.....	.....	.....	Mattai	.....
Voyage	.....	.....	.....	Johatayha	.....
WARRIOR	.....	.....	.....	.....	.....
Water	Dheah and Onejo	Rak	.....	Dak	Dak.
Warm	.....	.....	.....	Keeojan	.....
Weak	At loan	.....	.....	.....	.....
Weapon	.....	.....	.....	Hindell	.....
West	.....	.....	.....	Hash-sohang	.....
White	Unat	.....	.....	Tenjeea	.....
White man	.....	.....	.....	Bajo-tatenn ha-matt	.....
Wife	Cance	Incam	.....	.....	Kan.
Wind	Háyi	.....	.....	Hash	Hamir.
Wing	.....	.....	.....	Danowen	.....
Winter	.....	.....	.....	.....	Sohong S. W. Monsoon.
Woman	Encáná	Ungcan	Angana	Angana	Engkana.
Wood	.....	.....	.....	Oonóeet	.....
YELLOW	.....	.....	.....	Laaom	.....
Yellow man, *e.g.*, Malay	.....	.....	.....	Kolog-hamatt	.....
Yes	Jo	.....	.....	Aôn	.....
Yesterday	Menzovi	.....	.....	Mandioj	.....
Young	.....	.....	.....	Eclooh	.....

Vocabulary of the Language spoken in the Central Nicobar Islands—contd.

English.	Fontana, 1795.	Barbe, 1846.	Rink, 1847.	Novara, 1862.	Man, 1869.
		NUMERALS.			
1	Hean	Hing	Hang	Hayang	Hairu.
2	Haa	Hahoo	Ah	Ah	Engh.
3	Loe	Looha	Loa	Loeh	Sooay.
4	Toan	Fuan	Foan	Fooan	Fuan.
5	Tanee	Thanin	Tanein	Tanayee	Tanai.
6	Tafoul	Thafool	Tafuet	Tafooél	Tafoual.
7	Isat	Hakiat	Isat	Ishiatt	Eesat.
8	Ensoan	Infuan	Onfuan	Oenfoan	Engfuan.
9	Eancata	Inhatta	Hanghata	Hayanghata	Hairughata.
10	Sicom	Lam	Sam	Som	Seomb.
11	Sicom hean	.....	Sam hœng	Som-hayang	Seombhairu.
12	Sicom Haa	.....	Sam ha	Somah	.....
20	Hemomthouma	Hingian	.....	Heng-oomtcho-ma	Hairutuan hairu.
30	Rocate	Loohagian	.....	Heng-oomtcho-ma toklay	Hairutuan maiuay.
40	Toan moan thiuma.	.....	.....	Ahm oomtcho-ma	.....
50	.....	.....	.....	Ahm oomtcho-ma toklay	.....
100	Sicom-Sicom	.....	.....	Som oomtcho-ma	.....
		PRONOUNS.			
I	Thiou	.....	Kji	Teeoa	.....
Thou	Mhihe	.....	Ma	Mooayh	.....
He	.....	.....	.....	Ahn	Aney.
We	.....	.....	.....	Teeoe	.....
Ye or you	.....	.....	.....	Eefoe Eefoe-bajoo	.....
They	.....	.....	.....	Oomtohm	.....
Mine	.....	.....	Tsang kji	.....	.....
Thine	.....	.....	Tsang ma	.....	.....
This	.....	.....	.....	Neeáe Neéna	.....
That	.....	.....	.....	Anáay	.....
Who	.....	.....	.....	Tehée	.....
		VERBS.			
To buy	Hacaou	.....	.....	.....	.....
„ come	.....	Kathara	.....	Kaaytery	Katre.
„ dance	Hanan	.....	.....	Kataoga	.....
„ drink	Peoum	Phim	.....	Táoop	Top.

Vocabulary of the Language spoken in the Central Nicobar Islands—concld.

English.	Fontana, 1795.	Barbe, 1846.	Rink, 1847.	Novara, 1862.	Man, 1869.
		VERBS—*contd.*			
To eat	Hanino	Hookgnok	Ungha	Naok	Engokk.
„ give	.....	.....	.....	.....	Tangnya-samay.
„ go	.....	Ahochoo	Unshonga	Tchoo	Ectakke.
„ have	.....	.....	.....	.....	Ought.
„ kill	.....	.....	.....	Oorree	.....
„ laugh	.....	.....	.....	Itee	.....
„ lay down ...	Laam	.....	.....	.....	.....
„ light	Ajouhy	.....	.....	.....	.....
„ love	.....	.....	.....	Soojonghien	.....
„ rain	Hame	.....	.....	.....	.....
„ run	.....	.....	.....	Deeann	.....
„ row	Duonde	.....	.....	.....	.....
„ see	.....	.....	.....	Hadah Oog hadah	.....
„ sell	Henvlej	.....	.....	.....	.....
„ sing	.....	.....	.....	Ackásha	.....
„ sleep	Etaja	.....	.....	Eetáyak	.....
„ smoke	Pheumboj	.....	.....	.....	.....
„ speak	Hicheackeri	.....	.....	Olloula	.....
„ stand	Achicienga	.....	.....	Ock sheeaga	.....
„ walk	Hansciounga	.....	.....	.....	.....
„ weep	Houm	.....	.....	Tecom	.....
„ write	Athe het	.....	.....	.....	.....
„ yawn	.....	.....	.....	Moongwap	.....

SENTENCES.

Come hither	Hanchiatena	Fontana.
Where do you go to?	Foot kjun ma	Rink.
I go on board the ship	Foot jo tol tjiong	Rink.
I remain here	Jo katog ita	Rink.
Who is he?	Tchick ahn	Novara.
Have you a shell?	Orten hangei	Man.

Official correspondence ultimately leading to possession being taken of the Nicobars by Her Majesty's Indian Government.

From COMMODORE G. R. LAMBERT, R. N., *in charge of the Indian Division of the India and China Station, to the Secretary to the Government of India, Foreign Dept.,—No.* 799, *dated* 28*th February* 1852.

I HAVE the honor to acquaint you, for the information of the Government of India, that having received from the Commissioner at Moulmein the accompanying statement* of alleged piracy and murder committed on two British vessels at the Nicobar Islands, I have despatched the *Tenasserim* to rescue the remaining crew, agreeably to the enclosed instructions,† as I am unable at present to spare one of Her Majesty's ships to perform this service.

* Marked A.

† Marked B.

A.

Enclosure to COMMODORE LAMBERT'S *letter, dated* 28*th February* 1852.

COPY of a paper received from Lieutenant-Colonel Bogle, Commissioner, Tenasserim Provinces, on the 25th of February 1852.

From H. HOPKINSON, Esq., *Principal Assistant to the Commissioner, Tenasserim Provinces, to* LIEUT.-COL. A. BOGLE, *Commissioner, Tenasserim Provinces,—No.* 799, *dated* 23*rd February* 1852.

IN obedience to your instructions, I have the honor herewith to forward a copy of the statement made before me by Kaleefah Sahib Malim and Master of the Brig *Safreena*.

2. The narrative is, as you will observe, purely matter of hearsay, derived from a third party, Soobrailoo, now the inmate of an insane hospital; but we have the most positive assurances of the Malim, that it was communicated to him when Soobrailoo was in full possession of his senses, and that he manifested no symptoms of insanity until thirty-five days after he had been on board the *Safreena*, so that there was ample time to obtain the details that have been given us.

3. I have sufficient confidence in Kaleefah to believe that he has not been guilty of any intentional exaggeration, and that he has related the story as he got it from Soobrailoo; but what degree of credit can be given to Soobrailoo himself is another question. I would observe only, that an account so coherent and so detailed is likely to be beyond his powers of invention, and can hardly be ascribed to the working of a crazed imagination.

Statement of MALIM SAHIB, *son of* KALEEFAH SAHIB MALIM, *of Nagore, by occupation a Merchant and Master of the Brig* SAFREENA *now lying in the Port of Moulmein, taken before me,* HENRY HOPKINSON, Esq., *Principal Assistant to the Commissioner in the Tenasserim Provinces, this* 13*th day of February* 1852, *who saith—*

"I sailed from Nagore in the month of August last to Veemeely Patna thence to Penang, and from Penang I came on to Nancowry Island, arriving in all November. I got as many cocoanuts as I could at Nancowry Island and filled up with more at Car-Nicobar, where I remained up to about the 20th December. From Car-Nicobar I was driven by stress of weather with the loss of all my sails to Junk Ceylon; I had to stop and refit there and take in provisions, and did not leave till the 20th January last when I came on here. One morning, about 2 A. M., while lying off Nancowry, and about thirteen days after my arrival, there came along side the ship a man on a log of wood; I lowered a boat and picked him up. He appeared much exhausted and could only tell me at first that his name was Soobrailoo, and that he was a Coringee; he was however in full possession of his senses, and he soon recovered strength sufficient to relate his story. He said that he was one of a crew of 45 men belonging to a Coringee craft which had come from Singapore to Nancowry to load with cocoanuts, but before the cargo could be completed she was one day surrounded by a number of armed boats, whose crew boarded and carried her, and put all the people to death with the exception of nine, of whom the narrator was one, and who escaped by hiding themselves in a water tank. When night fell they endeavoured to swim on shore; four were drowned, but the other five managed to reach the land. They soon however got separated in the jungle. Soobrailoo wandered about some time, but at last was captured by the islanders who kept him prisoner. He managed at last to bite through his cords and so got free from them, and gained my ship on a log as I have mentioned; Soobrailoo told me his vessel's name, but it was a long Coringee word, and I have forgotten it; she was lying off the southern side of the Island of Carmorta, about the middle of the island, and perhaps half a mile from the shore, when she was attacked; the savages sank her, and Soobrailoo pointed out to me her mast still remaining above the water. Soobrailoo was assuredly quite sane when he came on board us, and for thirty or thirty-five days subsequently. I do not know what then turned his brain, but he has been mad since. Soobrailoo told me that his was not the only ship that had been attacked by the natives of Nancowry, for, after he had been about a month on shore, an English barque came into the harbour formed by the islands of Nancowry, Carmorta and Trinkuttee, and anchored there for four or five days; a number of boats, more and more every day, went off to her. At last one day Soobrailoo saw her settle down and sink. Her long-boat came on shore full of Nancowry men; they brought with them an European lady and her child, a little thing not two years old. For four days the poor lady was the victim of their brutal abuse, when death put an end to her sufferings, and she was no sooner dead than they hacked the child to pieces with their knives.

"Before he left the island Soobrailoo fell in with three men; he found they were his countrymen, Coringees, and they proved to be

accompanying duplicate report of my visit in the steamer under my command to the Nicobar Islands in search of intelligence respecting some vessels that are said to have been cut off by the natives of these islands.

(DUPLICATE.)

From CAPTAIN W. DICEY, *Commanding the Hon'ble Co.'s Steamer* Tenasserim, *to* COMMODORE G. R. LAMBERT, R. N., *in charge of the Indian Division of the East India and China Stations,—dated* 11*th March* 1852..

IN compliance with your orders, dated 26th ultimo, I have the honor to inform you that I proceeded with the vessel under my command with all possible expedition to the Nicobar Islands, where we arrived on the morning of the 4th instant, making the north end of Carmorta. Sent a boat to examine the villages and get information from a native vessel lying between the Islands Carmorta and Trinkuttee (through which there was no passage for the steamer).

I proceeded round Trinkuttee Island and entered Nancowry Harbour by the eastern entrance, and anchored at 11 A. M. of the above date in the middle of the harbour, where we remained three days, sending all our boats to the different villages situated on the coast of the three Islands Trinkuttee, Nancowry, and Carmorta for intelligence; as the boats approached the villages the natives generally disappeared in the jungles, taking everything with them from their huts.

The 1st cutter, when near the Barque *Summud Ally* (the native vessel above alluded to), took a canoe in which was a Malay dressed in European clothes. He was brought on board and examined, but denied any knowledge of the vessels said to be cut off. He was very uneasy at being on board, and professed at first not to understand any language but Nicobar; but it came out at last that he could speak English, Portuguese and Malay, and was evidently a leading man amongst the islanders.

I offered him large bribes to induce him to give me some information respecting the vessels said to be cut off or their crews, and I threatened him without effect, but was obliged to send him back to his village, as nothing could be got out of him. I heard afterwards from the natives that he was the leader or principal in the piracies that have been committed here.

Two of the principal men of village Eng-you-ong, situated on the north-east side of Nancowry, voluntarily came on board in one of our boats, and stated that three vessels had lately been cut off by the people of the north-east end of Carmorta,—two native vessels of which they could give us no particulars, and the other an European vessel manned by natives with European officer and commander, and having on board two black women, and one white woman and child; that they were all murdered on board, with the exception of a few of the crew who escaped on shore, and the white woman and child had been taken on shore alive but died shortly after.

These two men accompanied us in the boats to point out the spot where the European vessel had been sunk, where we found 15 fathoms water, the entrance of Nancowry Harbour bearing E. by S. of Trinkuttee distant three miles. There being a strong breeze at the time, we could not make out anything under water; but the natives told us that on a calm day they could see the vessel, as the water was very clear.

It appears by their statement that the vessel was taken whilst in the harbour, and afterwards removed by them into deep water outside and then scuttled.

The reason of these men giving us this information I attribute to their being at enmity with the men in Carmorta; for when they were in our boats visiting the villages, they appeared particularly anxious to avoid coming near the men on the opposite island for fear of being attacked.

In searching the villages for three days we picked up several articles, as mentioned in the accompanying list, apparently belonging to vessels that had been taken by the natives, as they are things they would not buy, and are not likely to have been sold or given away by the possessors of them. The log book of a native vessel will, I have no doubt, give some clue to the name of the vessel when translated; it appears to be written in the Madras language. The English books, I should think, have been taken from an English vessel; the name of John Martin appears on the leaf of one of them, and W. Palmer on one of the other books; the former appears to be stained with blood.

On our return from Nancowry we passed close to the Island of Terressa, when several canoes came off to the steamer from the village of Lackseen without the slightest hesitation, and without our anchoring, showing they had nothing to fear; so different from the natives of Carmorta, who escaped into the jungles immediately our boats made their appearance.

These men from Terressa confirmed the statement made by the two natives respecting the vessels being cut off by the men from the north-east end of Carmorta.

Without telling them our object of visiting the islands, they at once said two or three vessels had been taken in Nancowry Harbour, and the crews murdered.

I think it probable, that had I more time to remain in the vicinity of the islands, I should have gained further information, but in accordance with your instructions to be back in Calcutta by the 15th, and being doubtful whether I should have sufficient coal to bring me back without touching at some port for a supply, I thought it advisable to leave when I did.

I have no hesitation in my own mind in saying that two or more vessels have been cut off at these islands within the last few months, making a fearful catalogue of vessels that have been destroyed and their crews murdered within the last ten or twelve years by these pirates, who murder all belonging to the vessels taken to prevent detection.

4. In this opinion the Lieutenant-Governor, I am directed to say, entirely concurs. For the purpose which is mainly in view in the re-agitation of this question, the mere establishment of a penal colony at one extremity of one island would be inadequate, nor would anything short of entire domination prevent the evils which now occur from the savage and unbridled ferocity of the present inhabitants! On the other hand, there is good reason to suppose that the occupation of these islands would bring many positive advantages, while their supposed unhealthiness would probably not be found more lasting than that of the coast and islands of Arracan.

From J. W. S. WYLLIE, Esq., *Offg. Secy. to the Govt. of India, Foreign Dept., to the* HON'BLE A. E. H. ANSON, *Lieutenant-Governor of the Straits Settlements,—No.* 25, *dated 7th January* 1867.

WITH reference to the case of piracy and murder at the Nicobar Islands which appears in your Proceedings for the month of October last under entries Nos. 30 and 31, I am directed by the Right Hon'ble the Governor General in Council to request that you will forward, for the information of the Government of India, a copy of the depositions taken in the Court of the Police Magistrate at Penang.

2. His Excellency in Council would also desire to be furnished with an expression of your opinion on the case, particularly as regards the amount of credit to be attached to the statements made by the deponents.

3. It is certainly very advisable that the piratical practices of the Nicobar Islanders should not pass unchecked; but as the Government of India hardly understands what the despatch of a ship of war can be expected to effect against savages, who on its appearance will immediately retreat to the jungles of the interior, I am to request that you will submit, for the consideration of the Government, any plan which may occur to you as better calculated to secure the object in view.

4. Such communication as the Government of India has hitherto had with the Nicobar Islands has been almost entirely carried on through the officers of the Burmah Commission. The Chief Commissioner of that Province, therefore, as well as yourself, has been called on for an opinion on the point, and in order to enable him to understand the circumstances of the particular case which has now re-directed the attention of the Government to these islands, the Governor General in Council desires that you will forward a copy of the depositions direct to Colonel Phayre also.

5. I beg to enclose, for your information, extract from a Note compiled in the Foreign Office in 1856, which contains almost all the information the Government of India possesses regarding the Nicobar Islands and their inhabitants.

From J. W. S. WYLLIE, ESQ., *Offg. Secy. to the Govt. of India, Foreign Department, to* COLONEL PHAYRE, *Chief Commr., British Burmah,— No.* 26, *dated the 7th January* 1867.

WITH reference to the accompanying extract from the Abstract of the Proceedings of the Government of the Straits Settlements, I am directed to inform you that Colonel Cavanagh has been instructed to forward to you a copy of the depositions taken in the Police Court at Penang, and to request that, after you have perused the papers, you will favor the Government of India with an expression of your views both as to the amount of credit which you would attach to the deponents' statements, and also as to the arrangements which, in case the Government should determine to undertake some measures of chastisement against the Nicobar Islanders, might appear to you best calculated to secure a permanent repression of their piratical practices.

2. The Governor General in Council is not satisfied that the mere despatch of a ship of war to the Nicobar Islands could have any satisfactory result.

3. An extract from a Note compiled in the Foreign Office in 1856, containing nearly all the information which the Government of India has regarding these islands, is herewith forwarded for your information.

From the Secy. to Govt., Straits Settlement, to the Secy. to the Govt. of India, Foreign Department,—No. 5-117, *dated the 23rd January* 1867.

IN acknowledging the receipt of your despatch No. 25, dated 7th instant, I have the honor, by desire of His Honor the Governor, to forward herewith, for submission to His Excellency the Governor General in Council, copies of the letters noted on the margin, on the subject of the recent outrage committed upon the crew of a British vessel at the Island of Trinkuttee in the Nicobars.

1.—Letter No. 495, dated 25th October 1866 (with enclosures), from the Resident Councillor, Prince of Wales Island.
2.—Letter No. 146, dated 5th March 1866, from Deputy Secretary to Government, Straits Settlements.
3.—Letter No. 533, dated 23rd November 1866 (with enclosures), from the Resident Councillor, Prince of Wales Island.

2. As far as His Honor is capable of judging, there appears to be every reason to place general credence in the truth of the story related by the survivors of the crew of the Brig *Futteh Islam*: of course, it is possible that, in his desire to drive a good bargain with the natives, the Nacodah of the brig may have attempted to overreach them, and thus afforded some slight provocation, which may have led to a dispute previous to the commencement of the wholesale slaughter; but the main features of the case will, His Honor is inclined to believe, have been as the three men have described.

3. There can be little doubt that if an outrage, such as the one above referred to, is allowed to pass unnoticed, the natives will become emboldened in their crime, and that the sacrifice of many lives may be

the result. At the same time, with the amount of information at present at his command, His Honor would feel extremely diffident in expressing any very decided opinion as to the proper course to pursue in order to obtain redress for the present massacre, and to afford due protection to our subjects for the future. However, he cannot but consider that the first step to be taken would be the despatch, to the scene of the outrage, of two British armed vessels, the Commander of the force being authorized to demand the surrender of the principal parties concerned in the late murder; should his demand fail to be complied with, he would be instructed to place the island under blockade, at the same time seizing every opportunity of obtaining precise information as to its topography, the position of the different villages, the number and resources of the inhabitants, &c.; so that, with these details in its possession, it would be in the power of the Supreme Government to come to a decision as to the propriety of adopting one of the three following plans :—

First.—To take possession of the island and establish on it a military post for the protection of trade.

Second.—To organize a small expedition for the purpose of penetrating into the interior and inflicting severe punishment upon the murderers by the destruction of their villages.

Third.—To simply destroy such villages along the coast as might be reached by the fire of the cruisers or by small boat parties.

In any case, it would certainly be advisable to make arrangements so as to ensure a visit to the island on the part of a man-of-war at least twice every year, so that the natives would not fail to understand that due retaliation would be required for any wrong inflicted upon a British subject.

Fourth.—In accordance with the instructions conveyed in the 4th paragraph of your communication, copies of the depositions with regard to the attack on the Brig *Futteh Islam* will be forwarded direct to the Chief Commissioner of British Burmah.

From the Hon'ble Colonel H. Man, *Resident Councillor, Prince of Wales Island, to the Secy. to Govt., Straits Settlements, Singapore,— No.* 405, *dated the* 25*th October* 1866.

I have the honor to forward, for submission to His Honor the Governor, some original depositions which have been taken before the Marine Magistrate regarding a barbarous outrage committed at the Nicobars on the crew of a Brig called the *Futteh Islam*, wherein 21 persons are supposed to have been murdered, and whatever goods the vessel contained carried off.

2. It is said that similar cases have formerly occurred in this locality. At any rate the present instance seems to demand a signal retribution.

From the Master Attendant, Prince of Wales Island, to the HON'BLE COLONEL H. MAN, *Resident Councillor,—dated the 25th October* 1866.

I HAVE the honor to report for your information that the Brig *Futteh Islam* of this port, returned on Monday night last from the Nicobar Island, Trinkuttee, the whole of the crew, with the exception of three men, having been murdered there by the natives.

She sailed from here on the 28th of August for Rangoon, touching at the Nicobars, as most native vessels do, to load cocoanuts for that port. It appears by the depositions of the three persons who brought the vessel back that there was no quarrel, nor any provocation whatever given; that the natives of the island rose on them, and murdered the Nacodah and crew when they were quite off their guard, and had no suspicion whatever of any intended treachery on the part of the natives.

The vessel had not much cargo on board; a few cases of piece-goods, some tobacco, a cask of rum, and some small articles, generally taken to the Nicobars to exchange for cocoanuts, was the principal part of her cargo.

She had also on board, according to the Nacodah's report at the Import and Export Office on clearing out, Rs. 1,800, none of which, nor a particle of her outward cargo, excepting the cask of rum, was found on board on her arrival here.

The kalashee, *Shaik Doud*, and the overseer of the cargo, *Sultan*, appear to be rather intelligent natives, but the cook-boy, *Pakier*, a lad of about 18 years of age, seems to be the contrary; they deserve great credit, however, for having brought the brig back to this port.

The agent for the owner (who is now at Nagore) has taken charge of the vessel.

P. S.—Trinkuttee is a small island connected with Nancorry (commonly called Nancowry) and close to it, where vessels have been cut off in former days.

Depositions taken before the Marine Magistrate of Penang,—dated 23rd October 1866.

Shaik Doud sworn:—I am a topman belonging to the Brig *Futteh Islam*. We left here about two months ago for Rangoon, touching at the Nicobars; we first anchored at Acheen; we were about a month and a half getting there, and stopped there six days; then we got up anchor, and arrived at Nicobar in three days at an Island called Trinkuttee; we stopped there four days. The first day two boats came with eight men only; they brought two or three fowls and some young cocoanuts (for the water); the second day they brought 2 or 300 nuts (very few); the third day they only brought one or two hundred nuts; the Nacodah gave them cloth, tobacco, Malay knives, and some arrack in exchange; the fourth day they brought a

few nuts; two boats came, first with only four or five men each; afterwards three boats came full of men; I think altogether about thirty men; there were five or six men sitting near the Nacodah, one man smoking a cheroot; he called for fire up out of the boat; they brought it up in a thick bamboo; after he had lit his cheroot, he, with the same bamboo, hit the Nacodah over the head; he fell down immediately, and then a number of men who were in the boats alongside rushed up on deck with large pieces of firewood (jungle wood) and several spears, and began killing as fast as they could. I then jumped down into the hold with two others, and we hid ourselves behind some wood and mats. This was about 3½ P. M.; we remained down until about 7 o'clock, when it was getting dark; we then came on deck; we found not a soul either dead or alive, but there was a great deal of blood about the deck and something like teeth. We got the pin out of the shackle of the chain and slipped it (the chain); this was about 9 P. M. There was only a little wind when we started, but when we got some distance out, it freshened up. There appeared to be no quarrelling whatever before the natives began to murder the crew; but when one man is knocked down, the Chooliahs run away like so many fowls. There may be a man or two alive on shore; I can't tell; but I don't think there is, for the natives seem to have cut them up like beef. We were eight days coming here, and anchored outside the fort last night at 9 o'clock. When I was in the hold I heard people speaking on deck. The natives there speak the Chooliah language and Malay. I heard one say in the Malay language "*Sommohr suda aabeesh.*" I think there must be some Malays among them; they speak the language so well. There were 24 persons on board when we left here, and 21 have been killed. There were two boys of about 14 years old and a girl of about seven or eight years, the daughter of a *seekanie*. I should know the island again if I were to see it.

SHAIK DOUD,
his × mark.

Before me,
(Sd.) G. F. GOTTLIEB,
Marine Magistrate.

Sultan sworn:—I am the *malbhundary* or person who takes account of all cargo that comes in or goes out of the Brig *Futteh Islam*. I know the cargo that was on board when we left. From this we went to Acheen in about 18 days; we took in water, went out, were out some days, and put back; stopped there three days and went out again. We did not trade there at all. We got to the Nicobar in six days from Acheen. The first day two boats came off with a few green cocoanuts, for which we gave them some tobacco and each man a wineglass of rum. There were eight men. The second day two boats came with about 10 men; they brought some cocoanuts, not many, for which we gave them China tobacco; they came early in the morning and left about 10; they came again at 4 P. M., and then brought about 2 or 300 cocoanuts, and whilst we were putting the nuts down, the natives rose on us. The head man

called for fire, and they handed up out of the boat a thick heavy bamboo about two feet long. The head mān (apparently) struck the second Nacodah first, and when he was down, then the first Nacodah. There was no quarrelling whatever. The break out was about 4 o'clock, when I jumped down into the hold, and got behind some firewood and mats. It was nearly dark when we came up. Whilst we were down we could hear a great noise on deck, but could not make out the words. They speak the Malay language. When we came up we saw nobody, but there was a good deal of blood about the deck. There were two boys on board for cooking, about 10 or 12 years old, and a girl about 10 years old. They *may* have taken them on shore, but I think they killed them all and threw them overboard. I know the island very well; I should be able to point out the spot. We have been eight days coming back. I was never at the Nicobars before. The Island is called *Trinkuttee.*

The signature of SULTAN.

Before me,

(Sd.) G. F. GOTTLIEB,
Marine Magistrate.

Pakier sworn :—I was cook for the Nacodah and Malim of the *Futteh Islam.* I was on deck at the time (forward). There was no quarrelling or loud talk whatever. I saw a man strike the Nacodah with a bamboo, and I then got down into the hold about 3 o'clock. The moon was up when we came up on deck: nobody was to be seen; we were not far from the shore.

PAKIER,
his × mark.

Before me,

(Sd.) G. F. GOTTLIEB,
Marine Magistrate.

Sultan recalled,—says there was on board the brig on leaving Penang, as follows:—

4 chests of various kinds of cloths and handkerchiefs.
1 chest of glass-ware.
1 ditto China tobacco.
1 ditto containing gunpowder and fish hooks.
1 ditto black cloth.
5 pieces Europe longcloth.
20 swords.
25 axes.
1 bag of bird shot.
1 bale of leaf tobacco.
1 large cask of rum.
1,000 empty bottles.

There is nothing of the above remaining on board, but the cask of rum (from which 55 bottles had been taken out and a number of empty bottles). The Nacodah had a bag of rupees in his cabin (I don't know how many), which has also been taken by the natives of the island.

The signature of SULTAN.

Before me,

(Sd.) G. F. GOTTLIEB,
Marine Magistrate.

From the Deputy Secy. to Govt., Straits Settlements, to the HON'BLE COLONEL H. MAN, *Resident Councillor, Prince of Wales Island,—No.* 146-1159, *dated the 5th November* 1866.

IN acknowledging the receipt of your letter No. 495 of the 25th ultimo, with enclosures, relative to the attack on the Brig *Futteh Islam*, I have been desired by His Honor the Governor to request that you will point out to the Master Attendant that some cross-examination of the two men Shaik Doud and Sultan should have taken place in order to clear up the discrepancies between their statements and render their depositions less meagre; the vessel also should have been inspected to ascertain whether the marks of blood to which the witnesses referred were still visible.

2. The necessary communication on the subject of the outrage has been addressed to the Senior Naval Officer.

From the HON'BLE COLONEL H. MAN, *Resident Councillor, Prince of Wales Island, to the Deputy Secy. to Govt., Straits Settlements, Singapore,—No.* 533, *dated the 23rd November* 1866.

I HAVE the honor to acknowledge the receipt of your letter No. 146 of the 5th instant, and to forward further evidence in the case of the Brig *Futteh Islam*.

2. I would mention in explanation that before sending off the letter I had ascertained from Captain Gottlieb that he had personally inspected the vessel and found in it corroborative evidence of the truth of the lascar's statement; and that he had further told me that the reason he had not proceeded with the examination of the cook-boy, Pakier, was that he found him of such very defective intelligence, that he could place no reliance on any statement he might make. The proceedings were somewhat hurried, as we were anxious to take advantage of a steamer starting that evening for Singapore.

From the Marine Magistrate, Prince of Wales Island, to the HON'BLE COLONEL H. MAN, *Resident Councillor,—dated the 15th November* 1866.

I BEG to inform you that I have recalled and cross-examined those three persons who brought back the Brig *Futteh Islam* from the Nicobars, and I send herewith a copy of their cross-examination. I beg also to

notice that I went on board the *Futteh Islam* myself the morning after her arrival here (which was at night), and saw distinctly marks of blood in two places, *viz.*, in the front of the raised quarter-deck, that is, the perpendicular part where blood had apparently been running down, and also at the starboard chesstree against the bulwark, where blood had also been running down the side.

It appears that the Nacodah and Karaney (sometimes called the 2nd Nacodah) of the brig were sitting aft on the raised quarter-deck, with a number of natives round them, when they were murdered; the spot was pointed out to me by the survivors.

I have been informed that several native vessels and an English barque were cut off in this same island many years ago, and were burnt after the crews were murdered. The natives, I have been told, have books and papers of different vessels they have cut off. But of this, of course, I have no proof. I remember being cautioned when I commanded a ship out of this port (some 40 years ago) never to attempt to trade at that island.

Cross-examination of the Survivors of the Brig Futteh Islam, *by the Marine Magistrate, Penang, on the 12th November* 1866.

Shaik Doud recalled, on oath, further deposeth as follows:—When we first anchored at Acheen we remained five or six days; then we went out and got near the Nicobars, but it was blowing so hard that we ran back and anchored in Acheen roads, where we stopped three or four days, and then went out again, and anchored at Trinkuttee in three or four days. The Nacodah and Karaney were sitting on the raised quarter-deck when they were killed with a number of natives round them. We did not unshackle the chain but cast off the end which was made fast round the mast; I was wrong in saying we unshackled it. I said, when last examined, I saw something like *teeth* on the deck; there was something *white*. I don't know what it was; I did not touch it. Nearly the whole of the deck was covered with blood. When we slipped the cable the wind was blowing off the land, a light breeze; we hoisted the jib and foretop-mast stay-sail; I then went up and loosed the foresail, and foretop-sail, and foretop gallant-sail. I did it all myself; the two other men could not go aloft. I know something of the compass. I know Penang was to the eastward. We did not anchor anywhere until we sighted Penang. Sultan and myself steered the vessel; the cook-boy knows nothing.

SHAIK DOUD,
his × mark.

Before me,

(Sd.) G. F. GOTTLIEB,
Marine Magistrate.

Sultan recalled, on oath, further states:—I saw nothing like *teeth*, but there were pieces of a man's brains lying about the deck. We did not wash the deck; it remained. I saw the natives of the place kill two men, the Nacodah and Sarang. The Nacodah and Karaney were sitting on the raised quarter-deck on the starboard side, with their backs against the skylight, the natives forming a semicircle round them. There were other natives aft and in boats on both sides; they made a great noise when they commenced killing our men. I jumped down the main hatchway on some cocoanuts. The head Nacodah was killed first and then the Sarang. There was a great deal of blood on both sides of the deck when we came up. The brig lay about half a mile off shore. The last time I gave evidence here I was flurried; I am quite cool and collected now. I was on deck when the natives commenced killing the crew. There were no high words or quarrelling whatever.

The signature of SULTAN.

Before me,

(Sd.) G. F. GOTTLIEB,
Marine Magistrate.

Pakier (cook-boy)—I saw the natives of the island kill two of our men the 1st and 2nd Nacodahs. I went down the fore-hatch. I was forward at the cook-house when the two men (the Nacodahs) were knocked down. We got down into the hold about 4 o'clock and came up about 7. There was nothing to be seen about the deck but a great deal of blood. We slipped the cable and came away. I think I should know those men if I were to see them again.

PAKIER,
his × mark.

Before me,

(Sd.) G. F. GOTTLIEB,
Marine Magistrate.

From COLONEL A. FYTCHE, C S. I., *Chief Commr., British Burmah, and Agent to the Governor General, to the Secy. to the Govt. of India, Foreign Department,—No.* 52*P., dated the* 22*nd March* 1867.

I HAVE the honor to acknowledge the receipt of your letter No. 26, dated 7th January last, forwarding an extract from the Abstract of the Proceedings of the Government of the Straits Settlements, in the Foreign Department, from the 1st to 31st October 1866, and informing me that Colonel Cavenagh had been instructed to forward me certain depositions, taken in the Police Court at Penang, relative to a piracy lately committed on the British Brig *Futteh Islam* by the Nicobar islanders.

After a perusal of these documents, I am requested to report the amount of credit I attach to deponents' statements, and also as to the arrangements which, in case the Government should determine to

undertake some measures of chastisement against these islanders, might appear to me best calculated to secure a permanent repression of their piratical practices.

2. I have no reason whatever to doubt the whole truth of the statements made by the three survivors of the *Futteh Islam*. They agree fully with many others of a similar nature I have heard of from time to time, and with those traced and enquired into by Captain Lewis, the writer of *Busch's Journal* (referred to in extract from a Note compiled in the Foreign Office in 1856, and forwarded with your letter), and reported to the Government of India by him in 1845-46.

3. Captain Lewis, who is now Master Attendant of Rangoon informs me that he knows the exact position where the present outrage was committed, and in the accompanying rough sketch* has marked out as near as possible the village Malacca, where the pirates reside. It will be observed that the village is not situated in the Island of Trinkuttee, but in a small cove of Nancowry Harbour in the Island of Nancowry, from which they frequently pass over to Trinkuttee to fish and collect salt deposited in natural pans there. He states, also, that they are the same pirate horde who cut off two vessels at anchor under the S. W. point of Trinkuttee in 1852, and after murdering every soul on board both vessels, as far as he could ascertain from personal enquiries on the spot, slipped the cables of these vessels and towed them off the east side of Nancowry, where they scuttled them in eighteen fathoms water, and where, after four days' search in boats, he discovered them.

4. Both Captain Lewis and many others whom I have conversed with formerly regarding piracies committed at the Nicobars, agree that, with very few exceptions, all vessels that have been cut off at these islands have been so by the people residing in and near to Nancowry Harbour, instigated possibly in some instances by Malays who reside there every season to catch and dry the bichè-de-mer (*holothuria edulis*), and encouraged, too, no doubt, by the impunity with which they have hitherto committed these outrages.

5. I am decidedly of opinion that steps should be taken to punish this pirate horde, and the only mode of doing so effectually will be by the entire destruction of the plantations of cocoanut trees in the vicinity of Malacca, and the village itself destroyed by fire; after which a notice on a white board, written in Malay character with black letters, should be attached to some tree, stating the cause of this demonstration. If possible, endeavours should be made to get one or two of the natives on board the vessel sent to carry out this duty previous to its execution, and explain to them the reason, also, why the punishment is inflicted, and not liberate them until it was accomplished. The wealth of these islanders consists in these cocoanut plantations, and the above course has been suggested to me as the only one which is likely to have any deterrent effect.

6. The armed steamer *Kwantung*, with the additional crew that has been lately recommended, with perhaps a portion of the Marine Reserve at Port Blair, will be able to carry out the above duty, and

* Sketch omitted.

she might be usefully employed occasionally in the season (N. E. monsoon) when vessels generally frequent the Nicobars in visiting these islands. This, in conjunction with one example of punishment, would go far to prevent further piracies.

7. The Nicobar Islands were only finally abandoned by the Danish Government in the latter end of 1857 or the commencement of 1858. If they had been abandoned earlier, they would probably have been examined as to their capabilities for a convict settlement, as well as the Andaman group. There is one island of this group, Carmorta, I am informed, about nineteen miles in length, and from eight to three miles in breadth, with good anchorage at all seasons, entirely free from jungle, and formed from north to south of a series of undulating hills; abundance of good water readily obtainable, good soil, and in every respect far preferable as a convict settlement to Port Blair.

From the Secy. to the Govt. of India, Foreign Department, to COLONEL A. FYTCHE, C. S. I., *Chief Commr., British Burmah,—No. A, dated 22nd April* 1867.

I HAVE received and laid before the Governor General in Council your letter No. 52P, dated 22nd ultimo, submitting your views in regard to the murderous attack lately committed on the British Brig *Futteh Islam* by certain of the Nicobar islanders.

2. In reply, I am directed by His Excellency in Council to observe that there has always been much difficulty in dealing with the cases of vessels cut off at the Nicobars; for these islands being freely resorted to during the N. E. monsoon by the Malay boats, all of whom are ready to join in acts of piracy when opportunity offers, it has seldom been quite clear whether the islanders or the Malays were chiefly guilty. In this case of the *Futteh Islam*, there appear to have been both islanders and Malays, judging from the depositions of the survivors. The two who are intelligent witnesses speak of Trinkuttee as the island off which they were when the vessel was boarded, and 21 out of 24 people murdered. Captain Lewis is inclined to believe that this outrage was committed in Nancowry Harbour or Strait, and that the murderers belonged to the village of Malacca. This may be so, but Sheikh Doud's evidence does not bear out the fact; and here again is another element of uncertainty.

3. You are of opinion that no other punishment will be so effectual as the entire destruction of the cocoanut plantations in Malacca, and the burning of the village. His Excellency in Council, I am desired to state, does not approve of cutting down the cocoanut trees of the islanders, for the cocoanut is the staple article of their *honest* trade, the other articles being few and of small value. By destroying cocoanut trees, the islanders would be cut off from their source of food and traffic for some years. Thus an additional stimulus to piratical acts would be given by a retaliatory measure of this character. At any rate, unless very clear oroof be obtained that the village of Malacca is the offender, this mode of punishment will not be resorted to.

4. His Excellency in Council is of opinion that Sheikh Doud and Sultan should be engaged to point out to some of our cruizers the exact place where the *Futteh Islam* was at anchor when the slaughter of her crew took place. If it proved to be the spot off the village Malacca in the Nancowry Strait pointed out by Captain Lewis, there would be a fair presumption against that place and its inhabitants. Failing proof, the most effective measure would, His Excellency in Council thinks, be a blockade of the four islands which compose the group, *viz.*, Carmorta, Trinkuttee, Nancowry, and Katchall, so as to cut them off for the space of a N. E. monsoon from all trade with the Malay or Burman coasts, informing the inhabitants, however, that on surrender of the perpetrators of this particular outrage, the blockade will be raised.

5. The Commodore in Command in the Indian Seas has accordingly been addressed on the subject, and requested to carry out the blockade after the close of the S. W. monsoon, provided such a measure be practicable, and the means at his disposal enable him to spare a vessel for the purpose. The Government of the Straits Settlements has also been requested to send Sheikh Doud and Sultan (who can best identify the guilty village) to meet the steamer which may be deputed by the Commodore.

From the Secy. to the Govt. of India, Foreign Department, to the Commodore in Command in the Indian Seas,—No. B, dated the 22nd April 1867.

I AM directed by His Excellency the Viceroy and Governor General in Council to furnish you with a copy of the correspondence* which has taken place with the Government of the Straits Settlements and the Chief Commissioner of British Burmah regarding the murder of the crew of the British Brig *Futteh Islam* by certain of the Nicobar islanders, and the determination of the Government of India not to leave the crime unpunished.

* To Governor, Straits Settlements, No. 25, dated 7th January.
To Chief Commissioner, British Burmah, No. 26, dated 7th January.
From Secretary to Government, Straits Settlements, No. 5-117, dated 23rd January.
From Chief Commissioner, British Burmah, No. 52P, dated 22nd March.
To Chief Commissioner, British Burmah, No. A of this date.

2. You will observe that to effect the object in view, and failing clear proof that the outrage was committed by the residents of the particular village Malacca, His Excellency in Council is inclined to prefer a strict blockade of the Nancowry group of islands, so as to shut them out from the barter trade on which they so much depend, until they surrender the guilty persons. His Excellency in Council, therefore, would be glad to know if the means at your disposal will enable you to meet the wishes of this Government by despatching a steam vessel to effect the blockade after the close of the S. W. monsoon.

3. The Government of the Straits Settlements has been requested to send Sheikh Doud and Sultan, who may be able to identify the guilty village, to meet any steamer that may be deputed by you.

From the Secy. to the Govt. of India, Foreign Department, to the Governor of the Straits Settlements,—No. C, dated the 22nd April 1867.

WITH reference to your predecessor's letter No. 5-117, dated 23rd January last, regarding the murder of the crew of the British Brig *Futteh Islam* by the Nicobar islanders, I am directed by the Governor General in Council to furnish you with copies of letters this day addressed to the Chief Commissioner of British Burmah and to the Commodore in Command in the Indian Seas, containing the views of the Government of India as to the best mode of punishing the perpetrators of this gross outrage.

2. His Excellency in Council would be glad if you could arrange to send a vessel with Sheikh Doud and Sultan on board to meet the steamer which may be deputed by the Commodore, of the despatch of which timely information will be given to you.

From COMMODORE C. T. HILLYAR, *Commanding East India Station, to* HIS EXCELLENCY THE RIGHT HON'BLE SIR J. L. M. LAWRENCE, BART., G. C. B., G. C. S. I., *Viceroy and Governor General of India,—dated the 13th June* 1867.

I HAVE the honor to acknowledge the receipt of a letter from the Secretary to the Government of India, dated 22nd April 1867, forwarding to me, by your Excellency's direction, copy of a correspondence which has taken place with the Governor of the Straits Settlements and the Chief Commissioner of British Burmah regarding the murder of the crew of the British Brig *Futteh Islam* by certain of the Nicobar islanders, and informing me of the determination of the Government of India not to leave the crime unpunished.

2. Having received a report from the Straits Government, through Captain Ross, of Her Majesty's Ship *Pearl*, senior officer in the Straits of Malacca, on this subject, dated so far back as November last, and not having received any communication from your Excellency in Council connected therewith, I deemed it advisable that one of Her Majesty's ships should visit these islands to impress upon the natives that we are fully prepared to punish them for any acts of piracy committed by them in these waters; and Her Majesty's Ship *Wasp* being the first vessel at my disposal, I sent orders to Captain Bedingfeld of that vessel, dated the 11th January last (with copies of the correspondence referred to), "to proceed to Prince of Wales Island to communicate with the Resident Councillor there; then to go on to the Island of Trinkuttee, and use his best endeavours to ascertain the truth of this alleged outrage, and whether any of the crew were yet alive and detained on the island, and, if so, endeavour to obtain their release; to be particularly careful as to his conduct with the natives, and not to undertake any hostile operations without my express authority, unless British life or property should be at stake and require immediate interference:"

but owing to that vessel being employed on the east coast of Africa, cruising for the suppression of the slave trade, my orders did not reach Captain Bedingfeld so soon as I anticipated, and she only left Trincomalee on the 11th May last.

3. Failing clear proof that the outrage was committed by the residents of the particular village, Malacca, I quite agree with your Excellency in Council that a strict blockade of the Nancowry group of islands should be established, so as to shut them out from the barter trade, on which they so much depend, until they surrender the guilty persons; and I shall make it a point to meet the wishes of the Indian Government and despatch a steam-vessel to effect the blockade after the close of the S. W. monsoon, about the end of November, when the heavy gales which usually blow in the early part of that month, are over.

4. I would respectfully suggest to your Excellency that, as I may not be able, with the small squadron under my command, to spare more than one vessel for this service, that one of the small gun-boats at Calcutta be sent to meet the ship-of-war I depute, to assist in this blockade, and to be under the orders of the naval officer in command.

5. The necessity of this blockade will depend, as I think your Excellency will agree with me, on the reports that I may receive on this subject from Captain Bedingfeld, of Her Majesty's Ship *Wasp*, and whether any steps have been taken by that officer and the Governor of the Straits Settlements to settle this matter; and I will not fail to forward to your Excellency in Council a full account of Captain Bedingfeld's proceedings as soon as they reach me.

6. I agree also in opinion with your Excellency in Council, shown in the 4th paragraph of the letter of the Secretary of the Government of India, of the 22nd April, 1867, No. A, to the Chief Commissioner of British Burmah, "that Sheikh Doud and Sultan should be engaged to point out to some of our cruisers the exact place where the *Futteh Islam* was at anchor when the slaughter of her crew took place," and I shall be obliged if your Excellency will give directions for these men to be in readiness for that purpose, and inform me where they are to be picked up.

7. I beg to inform your Excellency that I intend to make Trincomalee my head-quarters during this monsoon.

From the Secy. to the Govt. of India, Foreign Department, to the Colonial Secy to Govt., Straits Settlements,—No. 665, dated the 8th July 1867.

With reference to my letter No. C, dated 22nd April last, I am directed by the Governor General in Council to forward a copy of a communication* from the Commodore Commanding East Indian Station, from which it will be seen that the contemplated blockade of the Nancowry group of the Nicobar Islands will be carried out by the end of November next.

* Dated 13th June.

2. The Government of the Straits Settlements will observe that the Commodore concurs with the Government of India as to the expediency of despatching Sheikh Doud and Sultan to point out the exact scene of the atrocity now to be avenged. I am therefore to request that, with the permission of His Excellency the Governor, arrangements may be made for keeping these men in readiness, and that information of the port at which they can be picked up may be sent direct to the Commodore at Trincomalee.

Office memorandum by COLONEL H. W. NORMAN, *Secy. to the Govt. of India, in the Marine Department,—No.* 24*M, dated the* 26*th July* 1867.

IN reply to office memorandum No. 666, dated 8th instant, from the Foreign Department, the undersigned is directed to forward copy of a letter from the Officiating Master Attendant, No. 0391, dated 17th instant, and to state that the Right Hon'ble the Governor General in Council approves of the proposals therein contained for the employment of the *Kwantung* in the blockade of the Nancowry group of islands, and for a row-boat to be fitted as a gun-boat and attached to the *Kwantung* for service in shallow water and creeks which that vessel might not be able to enter.

2. It will be observed that the *Celerity* will not be ready to take the place of the *Kwantung* for some weeks, and it will be necessary that early intimation be given to the Master Attendant when and where that vessel should join the one with which she will have to act.

3. All other necessary instructions and communications to the Commodore will, it is concluded, be issued in the Foreign Department, unless it be desired, in order to prevent delay in dealing with the matter, that the whole affair should be dealt with in the Marine Department, in which case any necessary information as to what has been already ordered is solicited.

From the Offg. Master Attendant, to the Secy. to the Govt. of India, Marine Department,—No. 0391, *dated the* 17*th July* 1867.

Memorandum No. 666, dated 8th July 1867, from the Secretary to Government of India, Foreign Department, Political, to the Secretary to the Government of India, Military Department, with enclosure.

WITH reference to Assistant Secretary Major Lees' memorandum No. 33, dated 16th instant, with enclosures as per margin, herewith returned, I have the honor to report, for the information of His Excellency the Viceroy and Governor General in Council, that there are no gun-boats in Calcutta, and no vessels of that description at the disposal of this Department.

2. One of the small screw gun-boats that were sent out during the mutiny is at Chittagong, but she is only adapted for river navigation, and would be entirely unsuited to the service indicated.

3. The Steamer *Kwantung* would be a suitable vessel, and she has her armament on board.

4. Her place at Port Blair could be supplied by the *Celerity*, which is under repair, and will be ready for service in about six weeks.

5. Should it be deemed desirable to attach a small vessel to the *Kwantung* to go into shallow waters and creeks where the *Kwantung* cannot enter, a row-boat might be fitted as a gun-boat, as was done at the commencement of the last Burmah war, when Her Majesty's Ship *Serpent* blockaded the mouth of Bassein river with the aid of one of our row-boats so fitted as a tender.

From the Secy. to the Govt. of India, Foreign Department, to the Commodore Commanding East India Station, Trincomalee,—No. 765, dated the 2nd August 1867.

I HAVE received and laid before the Governor General in Council your letter dated the 13th June last, showing the steps you propose to take for carrying out the contemplated blockade of the Nancowry group of islands in the Nicobars.

2. With reference to your application for a small gun-boat to assist in the blockade, I am directed to state that, as there are no vessels of this description at Calcutta, it has been decided to place at your disposal the armed steamer *Kwantung* and a row-boat fitted up as a gun-boat instead. The latter, it is thought, might be useful to go into shallow waters and creeks where the *Kwantung* could not enter.

3. The Government of India is anxious to know as soon as possible when and where those vessels should join the ship of the Royal Navy designated for the service, because it would be necessary to despatch from Calcutta another vessel to take the place of the *Kwantung* at Port Blair. In order to save time, the Governor General in Council desires me to suggest that you should communicate your wishes direct to the Officiating Master Attendant at Calcutta, who will be instructed, through the Marine Department, to act at once on your communication.

4. With regard to the men Sheikh Doud and Sultan, whose presence you require in order to ascertain exactly the scene of the outrage now to be avenged, I am to add that the Government of the Straits Settlements has been requested to keep them in readiness, and to inform you of the port at which they can be picked up.

From COLONEL H. W. NORMAN, *Secy. to the Govt. India, Marine Department, to the Commodore Commanding East India Station, Bombay,—No. 47M, dated the 17th August* 1867.

HAVING laid before the Government of India your letter of the 30th ultimo, and the reports which accompanied it, of the murder

of the crew of the *Futteh Islam* in the Nicobar Islands, and of similar atrocities which have been committed there in former years, I am directed to acquaint you that, having carefully considered the matter, the Right Hon'ble the Governor General in Council has determined on the following measures, with the view, if practicable, of punishing those who committed the outrages in question, and of enabling the Government of India to decide in what way the natives of those islands may best be brought into order and similar atrocities prevented in future:—

I.—The association with Her Majesty's Ship *Wasp* of the *Kwantung* for the first business of the expedition, *viz.*, to recover the whole of the white captives and to punish the chief offenders. For this purpose two or three companies of good native troops, fully equipped for service, will be sent in or with the *Kwantung*.

II.—The appointment of Colonel Man, lately a Resident Councillor in the Straits Settlements, as Civil and Political Officer, should he be able and willing to undertake the duty, to enquire into and report on all that has occurred, and to advise the Government of India as to the measures to be taken in future for the effectual suppression of the piratical and plundering tendencies of these people, especially as to the expediency of holding the islands or not; and, if so, whether it should be by annexing them to the Government of the Straits or of India. He will be requested, in the event of his recommending the latter course, to state what specific arrangements he would suggest for carrying it out.

2. In communicating the above, and intimating that it has seemed to the Right Hon'ble the Governor General in Council better that all orders, &c., connected with the expedition should be issued in the Military Department, I am to transmit, for your information, copy of my communication to the Foreign Department, No. 24M, dated 26th ultimo, from which you will learn that the *Kwantung* cannot be made available for some weeks; and that His Excellency in Council has directed that a row-boat fitted as a gun-boat shall be attached to her for service in shallow waters, &c. In the meantime enquiry will be made as to the capacity of the *Kwantung* to carry the troops, and as to the best means of transporting any that she cannot accommodate.

3. As early an intimation as convenient is desired as to when and at what place of rendezvous the *Kwantung* should meet the *Wasp*, as also for how many days the native troops should be victualled, and whether it would be desirable that they should be supplied with tents of any description; and I am to request the favor of your causing intimation of the place of rendezvous to be sent direct to Colonel Man (at Penang), to whom a copy of this letter will be transmitted, with a request that he will at once inform you of his acceptance, or otherwise, of the post offered to him. Should you consider that it might be advantageous and likely to further the success of the expedition if he were personally to confer with you respecting it, he will be authorized to comply with any proposals you may make to him for that purpose.

4. Before finally deciding whether the native troops to be employed should consist of two or of three companies (of from 70 to 80 men each), the Right Hon'ble the Governor General in Council will be glad of Captain Bedingfeld's opinion on the subject, as that officer will have a better idea than can be formed by others who are unacquainted with the locality of the strength of the party which should be sent.

5. For greater convenience, and in order to prevent unnecessary delay, perhaps you will be so good as to forward a copy of any communication you may address to me on the subject referred to in the last two paragraphs to the Officiating Secretary to Government, Military Department, Calcutta, who will at once issue any orders that may be immediately necessary.

P. S.—Since the above was written, the Governor General has received your letters dated the 5th and 7th instant, and His Excellency will be interested in learning the result of the visit of the *Wasp* to the islands, which has been undertaken at the desire of the Government of the Straits for the purpose of endeavouring to release the captives. But His Excellency in Council does not think it advisable in any way to alter the arrangements already determined on and communicated to you in the foregoing letter.

From COMMODORE L. G. HEATH, *Commanding East India Station, to* HIS EXCELLENCY SIR J. L. M. LAWRENCE, BART., G. C. B., G. C. S. I., *Viceroy and Governor General of India,—dated Bombay, the 30th July* 1867.

I ENCLOSE, for your Excellency's information, copies of reports made by Captain Bedingfeld, Commanding Her Majesty's Ship *Wasp*, of his proceedings at the Nicobar Islands whilst endeavouring to ascertain the facts connected with the alleged murder of 21 of the crew of *Futteh Islam* in October last. These reports may be summed up as follows.

1*st.*—The whole of the men belonging to the *Futteh Islam* were murdered, but the massacre took place at Great Nicobar, and not, as previously supposed, at Trinkuttee (which is separated from Great Nicobar by a channel 50 miles wide.)

2*nd.*—In the immediate neighbourhood of Trinkuttee or Nancowry (which is close to it) there are certainly two, and perhaps four, white females and one boy kept in captivity by the natives, and that the vessels to which they belonged were wrecked or captured from three to seven years back.

Your Excellency will observe that Captain Bedingfeld's report on the *Futteh Islam* massacre is founded upon information he received at Nancowry; but assuming its correctness, it would seem that future proceedings should be directed—

1*st.*—To the recovery of the white captives at Nancowry; and

2*nd.*—To the summary punishment of Buttai and his co-villagers, the murderers of the crew of the *Futteh Islam* at Great Nicobar.

I would suggest to your Excellency that, considering the lapse of time since the actual committal of the outrages at Nancowry, and the great difficulty of separating the innocent from the guilty, the first object might be attempted by the offer of rewards and promise of immunity from punishment to those who delivered up the captives.

With respect to the punishment of the murderers of the crew of the *Futteh Islam*, I would suggest that authority should be given to the officer entrusted with the execution of the rough justice, which is I am afraid alone practicable in this case, to burn the village of which Buttai is the Chief, and to destroy, as far as possible, all means of sustenance within a radius of half a mile from the village. The crime appears to have been local, and the punishment would thus be equally circumscribed.

I am aware that your Excellency had intended to punish these Islanders by a blockade during the coming N. E. monsoon of the Nancowry group. The enclosed reports, however, show that to touch the most recent offenders, the Island of Great Nicobar would have to be included in the blockade, and it is because I could hardly spare a sufficient force for this purpose from my small squadron, without unduly weakening the force stationed on the coast of Africa for the suppression of the slave trade, that I venture to suggest, in the altered aspect of the case, a different mode of proceeding.

From Captain N. B. Bedingfeld, *Commanding Her Majesty's Ship-of-war* Wasp, *to* Commodore C. T. Hillyar, *Commanding East India Station,—dated the 6th July* 1867.

In continuation of my letter of proceedings dated 12th ultimo, I have the honor to inform you that we left Penang on the same date, and arrived at Nancowry Harbour on the 16th, having had occasionally to use steam in consequence of light and contrary winds and strong currents, and I took the opportunity when steaming on the 14th to lay out and practise at a target with shot and shell.

2. My report to the Lieutenant-Governor will give you full particulars of what we did at the islands.

3. Finding I could do no more without commencing hostilities, and fearing to endanger the lives of these unfortunate girls, unless the thing was well and effectually done, I reluctantly left the islands without obtaining their release on the 25th ultimo, making the best of my way to Penang with the natives I have detained on board, that full information might be given to the authorities of the atrocities that have been going on for years at these islands.

4. I sent one of the natives I had detained on shore with a message to the chiefs that they would be severely punished if any harm came to the white captives; and my intention was, had the Lieutenant-Governor given me 20 sepoys, to have returned and released them in the first instance, and then waited further instructions.

5. The Lieutenant-Governor, however, was involved in so many difficulties about the matter, owing to the Government only just having been turned over to the Colonial Office, the sepoys being still under the Indian Government, and the Attorney General being at Singapore also, and there being considerable doubt as to what jurisdiction the islands belong, that he begged me at once to proceed to Singapore to the Governor, as the case was urgent and most important, and no vessel would be going that way until the mail of the 9th instant.

I accordingly re-embarked the natives, and having coaled and directed your instructions to be sent on to me at Singapore, I left on the 2nd instant.

6. I arrived this morning, and shortly after the mail steamer came in I lost no time in seeing the Governor, and he is inclined to take most energetic measures to recover the white girls and punish the pirates at the Nicobar Islands. What these measures may be must depend on your instructions by the mail of the 12th instant. I have landed the prisoners and sent in the depositions of the natives, &c. I shall be unable to give you more information until next mail, when I shall have your further instructions, and I trust your approval of my proceedings.

The ship's company continue in good health, with the exception of the usual amount of sickness after general leave.

From CAPTAIN N. B. BEDINGFELD, *Commanding Her Majesty's Ship-of-war* Wasp, *to the* HON'BLE A. E. H. ANSON, *Lieutenant-Governor, Straits Settlements,—dated the 28th June* 1867.

I HAVE the honor to report, for the information of His Excellency the Governor of the Straits Settlement, that in compliance with orders from Commodore C. T. Hillyar, Commanding the East India Station, I proceeded to the Nicobar Islands to make enquiries as to the massacre on board the Brig *Futteh Islam* in October last, and also with reference to a statement made by Mahomed Myden that he had seen a white woman in captivity in the Island of Trinkuttee.

We arrived at Nancowry on the 16th instant, and anchored in False Harbour, where we found two English barques; one from Penang (the *Harriet*) had been trading for about a month, and on board her was Sheik Doud, who was supposed to have been sent to me at Penang; the man I have also belongs to the brig, but his name is Sultan; the former had fortunately prevented the Master of the *Harriet* from

anchoring in the very same spot where the murder took place, and which is at the Great Nicobars, at a place called Trinkuttee, Sambillang—Sambillang being the native name for the Island of Great Nicobar.

I was enabled to obtain all the information I required about this case at Nancowry, as the natives had brought their plunder to exchange, and I fancy are in league with these people. It is said that the money taken from the brig is buried somewhere on Carmorta Island, and that the brother of Sir John Nichols was present at the capture. All the crew were murdered, except the three that escaped to Penang: the head man concerned in the plot is called Buttai; his town is situated near the beach with deep water close in shore.

There seems to have been no provocation on the part of the crew of the brig, and this is probably only one of the many native vessels that have been plundered by these scoundrels (the others afterwards scuttled).

The other barque was the *Rattlesnake*, belonging to the Sultan of the Maldives, under English colors, only just arrived from Bombay; the statement of her Captain on oath (annexed) will be of considerable interest.

Hearing that the woman who spoke to Mahomed Myden about the white woman was living close by, I landed at the village of Enonaga, and asked her to come on board the following morning; she did so, and from the statement she made, I considered it advisable to detain her, together with four of the principal men who had come on board. By great good fortune Captain Francis, the man who was seen when the woman was a prisoner at Trinkuttee, was induced by a message from the old woman to come on board, and becoming violent when informed he would be detained, he was placed in irons. The several statements he has made since being a prisoner are annexed, as well as Terrasai Salamah, who is a Nancowry woman, and not a Malay as reported; her husband is now in Penang and is a Chinaman.

The news that Francis was detained getting on shore, the natives all deserted their villages, and I could get no certain communication with them until the 23rd, when, having sent Amor, the brother of Nichols, to a town up the end of Cross Harbour, he succeeded after three attempts in finding out where they were, and I sent a message to Hang-chee-up, telling him he was perfectly safe if he would communicate with me; that I was fully aware of the white childern being still on the island, and offering a large reward to him or any other native who should be the means of restoring any of the white prisoners; and also, on the other hand, that they would be most severely punished if they were not given up, or any harm came to them. The messenger was not allowed to return, and whenever we went near a village, the natives deserted it. After finding, therefore, that they would not communicate with me, I searched some of the villages for papers or anything that may lead to the identification of any of the ships (Francis having

told me that all the papers, books, &c., were stowed in his house at Trinkuttee); but finding everything had been removed by the natives, I considered it best to return at once to Penang for further instructions, and that the prisoners might be examined, my orders being strict that I was not to commence hostilities without further communication with the Commodore.

From all I have been able to glean from the contradictory statements made by these people, no less than three European vessels have been destroyed and their crews murdered, and numerous native craft, particularly Burmah boats.

The barque from which the lady, her two daughters, and an *ayah* were taken was captured about seven years ago; the story of this poor woman is sufficiently horrible: her husband murdered, she was taken on shore, and was soon after confined of a child (still-born). She was then handed about from one of these villains to another as they had a desire for her—for about two years, scarcely clothed, and with nothing to eat that she had been accustomed to. It was scarcely to be wondered at that she was miserably thin when seen by Captain Ali-bin-Myden: her children seem to have been separated from her also, and her anxiety for them must have been no small affliction. After she had been seen by white men, it seems it was not thought prudent to keep her any longer, and she was taken from Francis' place to By-u-ha, and there Hang-hang-su caused her to be poisoned together with her children: by the old woman's account the poison took effect, but not sufficiently to cause death. Hang-hang-su then took her into the bush and knocked her on the head: the children recovered; one about 12 years old is now with Hang-chee-up, and the other, somewhere about 15 years old, is still with Hang-hang-su, who murdered her mother. They are described as very fair with light hair; the younger one has some mark on her left cheek. Francis declares that both these children died of the poison, but I am inclined to believe the woman, who got her information from Hang-hang-su's wife who did the deed.

It therefore follows that if the statement of Francis be true, that there are somewhere in the four islands, Nancowry, Carmorta, Trinkuttee, and Katchall, four European females and one boy held in captivity. The two girls from the barque are supposed to be French (but why French I can't explain), the other two English. I think there is no doubt whatever of the two girls being alive.

I consider, therefore, that no time should be lost in securing these poor creatures and punishing the miscreants, as after the S. W. monsoon they can go in their canoes to the other islands, which they cannot do now on account of the sea, and the task would be more difficult.

I believe with about 30 sepoys and power to commence active measures I could manage this in a few days: their numerous villages are nearly all close to the shore and can be approached at high water. The houses are well built, and would take some time to repair. Their fowls, fat pigs, on which they set great store, are all about the villages, as

they could not live without the cocoanut trees planted round each village. Their canoes are completely at our mercy, and there are a great number of them; as a last pressure I would suggest cutting the nut from the cocoanut trees without killing the trees, and also the nut from the *mangquang*, their great article of food.

Their secret hiding-places could be discovered, and in fact such a pressure put upon all of them, that very shortly they would gladly give in and sue for peace. I should also suggest a reward to any native who would assist in procuring the release of the white children. A little cloth and rum would soon bring treachery in their camps, and when it is considered that a bottle of rum is worth 40 cocoanuts, the expense need not be great.

It seems quite astonishing that these beautiful islands, with one of the finest harbours in the world, should so long have been left to these piratical savages.

A mission (I believe Moravian) was established many years ago, and by the old woman's account they left partly because the people did not care to learn, and partly on account of the unhealthiness; it was when she was quite a little girl. Some of the cattle they left have bred, and it is said are now numerous on the fine grassy hills of Carmorta. Since this there seems to have been a man, named Captain Dawson, and a Mr. Goldsmith, living on the north end of Nancowry at different times.

The book I sent was given me by the old woman, and the entry on the fly-leaf should be enquired into. It can easily be found out if the crew and master of the *Arrogant* escaped. All the natives agree that they did; but they are given to lying.

The only plan I have of the harbour of Nancowry was taken in 1790, and as far as we could ascertain is correct as far as it goes. As it may be useful to refer to, I have caused a tracing to be taken and forwarded herewith.

I have brought with me the woman Terrasai Salamah, whose information is most important. Captain Johnston is said to be one of the greatest scoundrels on the island. All I have at present against him is that his people threatened to take the *Rattlesnake* as soon as I left, and which he acknowledged they were quite capable of doing if he was with them, but doubted if they would attempt it without him. Sir John Nichols is a hostage for his brother's return, and may be made use of for further communication with the natives and in taking them our ultimatum, and Captain Francis, who is said to be concerned in every villany that has taken place, and whose own statements are quite enough to condemn him. There is no doubt he consulted with Hang-hang-su to put the poor woman and her children out of the way, and kept her a prisoner for the vilest of purposes for upwards of four months.

I shall be glad to hand over the prisoners as soon as convenient. In conclusion, I have much pleasure in bearing testimony to the intelligence and zeal of Cassem, the Havildar of Police sent with me, who was most energetic and useful. I am also greatly indebted to Mr. Francis Shaw, who kindly volunteered his assistance as interpreter, and who, from his knowledge of the Malay language (which the natives all speak more or less), and his acquaintance with the native customs, was the greatest assistance to me and deserves my warmest acknowledgments. When convenient to you I shall be glad to wait upon you and give you any further information you may require upon this subject.

From the HON'BLE A. E. H. ANSON, *Lieutenant-Governor, Straits Settlements, to* CAPTAIN N. B. BEDINGFELD, *Commanding Her Majesty's Ship-of-war* Wasp,—*dated the 28th June* 1867.

I HAVE the honor to acknowledge the receipt of your report relative to the murder of the crew of the Brig *Futteh Islam* at the Nicobar Islands.

I beg to recommend that you should proceed to Singapore for the purpose of explaining the whole circumstances of the case to His Excellency the Governor of the Straits Settlements, and of obtaining his instructions with regard thereto.

It will be as well that you should take with you the persons whom you brought from the Nicobar Islands, in order that their evidence may be taken, and that they may be dealt with under the immediate direction of the Attorney General.

Statement of CAPTAIN ALI-BIN-MYDEN *of the Barque* Rattlesnake, *belonging to the Sultan of the Maldive Islands,—dated* 18*th June* 1867.

I HAVE been trading at these islands for the last six years, and I come two or three times in each year. I know the natives to be treacherous in the extreme. Numbers of wrecks happen yearly; principally Cling and Chittagong ships laden with rice and small stores. The crews are invariably murdered by the natives, and the wrecks plundered unless another ship happens to be in harbour.

I am aware of an English brig having been wrecked off the north end of Trinkuttee about six years ago, and I believe the crew were all murdered, except one woman. In November last I was here trading, and met a white European woman at the village of Captain Francis on Trinkuttee; she was evidently a captive. I spoke to her, offering to assist her to escape. She seemed in great distress and said they would murder her if she attempted it, and was crying bitterly. Immediately she was seen speaking to me, the natives came and shoved her into a house, but she told me, however, before they saw us that the moment a ship came into harbour, she was closely shut up, and only allowed out when there

were no ships near. I asked her how long she had been there, and she said only two or three months. She was very thin; she told me she arrived in a ship trading for cocoanuts; that the captain was murdered on shore, and the crew, being unaware of anything that had happened, were surprised at night, and all murdered, with the exception of herself; she was taken on shore.

In the morning they went off and broke up the ship; the panelling and planks are still to be seen in the town of Captain Francis on the north point of Trinkuttee.

I consider the most piratical parts to be Great Nicobar, Trinkuttee, (the worst of the lot), or Carmorta, Katchall (or Katschale) Ballipulo, very bad, all the west of Carmorta and the N. W. end of Nancowry: many wrecks happen here in the N. W. monsoon; and in the S. W. monsoon the wrecks are mostly at Trinkuttee.

The signature of ALI-BIN-MYDEN.

(Sd.) N. B. BEDINGFELD, *Capt.*,
„ F. SHAW, } *Witnesses.*

I HAVE seen and recognized the prisoner now on board the *Wasp* called Captain Francis, and who had the captive white woman in his village, and who thrust her into the house when I spoke to her, at the same time quarrelling with me for having done so, asking me what business I had to speak to her.

This and the foregoing statement I solemnly swear to be true.

NICOBAR ISLANDS,
The 21*st June* 1867. } The signature of ALI-BIN-MYDEN.

SWORN to before me on board Her Majesty's *Wasp*, this 22nd day of June 1867, having been carefully read over in the Malay language and sworn to with the usual Malay oath.

(Sd.) F. SHAW,
„ G. H. B. REED, } *Witnesses.*

(Sd.) N. B. BEDINGFELD, *Capt.*,
Her Majesty's Wasp.

Her Majesty's Wasp, *Nancowry Harbour, Nicobar Islands, Friday,* 21*st June* 1867.

CAPTAIN ALI-BIN-MYDEN came on board, and Francis was brought before him; he was ready to swear to the man as being the same that pushed the white woman into the house and threatened him for speaking

to her. Francis, after first denying this, admitted it to be true; Francis then stated that a ship came in by the western passage; the Captain was trading for cocoanuts; the ship came from Penang. The Captain's wife was a white woman; she had two children and was in the family-way; she had a Kling *ayah* with her; the ship was laden with stuff for barter, and Sundun heard there was a plot to plunder the ship. Putie, Hang-hang-su, and Cal-tu were in the plot. Hang-hang-su murdered the Captain on shore; afterwards they took the ship and murdered the crew and all, except the white woman, her two children, and the *ayah*: the white woman lived a month at Hang-hang-su's place as his wife. When Sundun heard there was no more rice to eat, and Hang-hang-su had determined to kill her in consequence, he went over to Hang-hang-su's place and brought the white woman and two children to Malacca; the Kling woman lived at Hang-hang-su's place. The captain's wife lived about a month at Malacca with Sundun as his wife; when the rice being all finished she went to my place to seek for food. She lived four months with me as my wife; after living four months at my place Hang-hang-su came and saw her, and a ship being in at the time, he got frightened and took her back to his house again. I told him to take her away, for I was frightened after she had been seen by the Captain of the *Rattlesnake*. Hang-hang-su got a poisonous fish, called *Ikan Buntar*, and gave it her to eat; he ordered his wife to make this up with *mangquang* and to give it to the woman and her two children. I heard they all died. I heard three of them were dead. I never saw them more. Hang-hang-su is very jealous of me; we are not good friends; we are at war. The ship was plundered four monsoons ago; this will make the fifth monsoon. The ship's panelling at my house in Trinkuttee was from a ship that was wrecked: you never see anything plundered from ships in the villages; that is always hid away in the bush. All the crew went to Rangoon; there were seven white men, a woman, and child. I gave them a place to live in at Trinkuttee; they lived there about a month; they went away by a Burmah ship. The Captain of the *Arrogant* was not killed or the crew; they all got away.

Sunday, 23rd June 1867.—Captain Francis sent for Mr. Shaw and made the following statement to him, after some attempts to hang himself.—About three years ago a brig came to Enonaga. Captain Corrie and the other natives of the place murdered the Captain and crew; after Hang-chee-up (he was not concerned in the murder) came and took the captain's wife and two children (one boy and a girl) to his house at Malacca; she lived there about a month, and then Proogan, brother-in-law to Hang-chee-up, came to Malacca, asking cloth from Hang-chee-up; the cloth was taken from the brig: he saw the white woman and her two children, and took a great fancy to the children; and, as he had no children of his own, asked Hang-chee-up to give them and their mother to him, as he wished to adopt them. Hang-chee-up gave them up, and they are now living at Trinkuttee with Proogan. Hang-chee-up, Proogan, and others plundered the brig, and then set the sails and took her out by the end of Katchall, where they scuttled her. The brig was at Enonaga about two days. Seven days ago a woman from Enonaga and another from Malacca came to my house at night (at midnight); they

roused me up and told me that a steamer had arrived in search of the white woman and children. They told me to be quick and hide them, and not to give any information to the white men regarding them, as they would be sure to burn down all the houses, shoot all the men, pigs, and fowls, and spoil the cocoanut trees. Anyan Guddio and six others (Johnston's younger brother) came to my place with a canoe, and told me that Johnston, Polongam, Amor, and Salamah were on board the steamer, and they wished to see me; they told me to be sure and not give any information regarding the white woman and children. All of them are at Trinkuttee now.

Monday, 24th June 1867.—Before we left, Francis again sent for Mr. Shaw and stated:—The white woman and two children I spoke of yesterday are not the same as those I said Hang-hang-su had in his possession. The ship they came in was plundered near Bynha. I am sure they are all dead, poisoned by Hang-hang-su. The vessel plundered by Hang-hang-su was a barque, and that by Corrie was a brig. The white woman who lived with me for four months was the one from the barque; the one from the brig never lived with me. The names of the two women that came to my house a week ago were Da-ooni-ha and Shan-esta. The white woman and two children taken from the brig are now at Proogan's place at Trinkuttee. The Kling woman, who came in the barque with the white woman, died about 15 days after she came on shore; she had a son with her; he is now a man, has curly hair, and lives at Ho-hoo.

True copy of statement as interpreted by Mr. Francis Shaw.

(Sd.) N. B. BEDINGFELD, *Capt*

Statement of Terrasai Salamah.

I KNEW Sundun; he died of consumption: he was a friend of Francis. Sundun was not speared by Hang-hang-su; he speared his brother Cowlim. The white woman was brought to Malacca, and Hang-hang-su had a quarrel about her with Sundun, but he was not killed. The brother was killed at Ballipulo. I know there is a white girl at Malacca and would bring her off if a party were sent with me. I have seen the children. The girl is living at Hang-chee-up's house. The girl is quite a child; she was the daughter of the woman Hang-hang-su poisoned; the elder sister is with Hang-hang-su; her breasts are just coming.

True copy as interpreted by Mr. Francis Shaw.

H. M.'s *Wasp*,
NANCOWRY HARBOUR,
The 30th June 1867.

(Sd.) N. B. BEDINGFELD, *Capt.*

Taken from the fly-leaf of "Goldsmith's Miscellany."

JAMES DONOVAN, in the month of January 1855, Commander of the British Ship *Arrogant*, of London, 250 (or 500) tons, cast away on the north end of Trinkuttee on the 12th instant; the ship is now abandoned, being full of water. I have brought my crew to Nancowry, trusting to charter a native craft to take us to some civilized place.

We are now entirely in the power of the natives.

(Sd.) J. DONOVAN.

From COMMODORE L. G. HEATH, *Commanding Her Majesty's Ship-of-war* Octavia, *to* COLONEL H. W. NORMAN, C. B., *Secy. to the Govt. of India, (Marine) Military Dept.,—dated Bombay, the 2nd September* 1867.

BEING about to proceed to Muscat, and not having as yet received any communication from Colonel Man as to his having accepted the post of Civil and Political Commissioner to the Nicobar Islands, I have directed Captain Bedingfeld to place himself in communication with that officer and attend to his requisitions. I have also directed him, after having consulted with Colonel Man, to communicate direct to you and the Officiating Military Secretary to Government, Calcutta, the answers to your questions as to the number of sepoys required, &c., &c., as detailed in your letter No. 47M, dated 17th August 1867.

I have also directed him to forward duplicates of his reports on this subject direct to you, and to write to the Officiating Military Secretary to Government, Calcutta, in case further assistance of any sort is needed.

From LIEUTENANT-COLONEL H. K. BURNE, *Offg. Secy. to the Government of India, Military Department, to the Colonial Secretary, Straits Settlements,—No.* 966, *dated the* 30*th September* 1867.

WITH reference to my letter No. 135, dated 5th September 1867, and to the Lieutenant-Governor's letter to the Foreign Department, No. 238, dated 22nd August 1867, reporting the proceedings of the *Wasp*, which recently proceeded with a small native force to the Nicobar Islands, I am directed to request that His Excellency the Governor of the Straits Settlements may be moved to state, for the information of the Government of India, whether His Excellency would desire that the measures recently determined upon, to send a small expedition to those islands, with a view of rescuing the captives, if practicable, and of punishing the perpetrators of the various outrages committed there, should still be carried out.

2. Copies of communications* which have not already been sent with my letter of the 5th instant are now forwarded for reference.

3. The favor of an early reply is solicited.

* Commodore's letter, 30th July 1867, with annexments. Commodore's letter, 5th & 7th August 1867, with annexments.

From COLONEL H. MAN, M. S. C., *to the Offg. Military Secretary to the Govt. of India,—dated Penang, the 30th September* 1867.

HAVING been directed by the Military Secretary to Government to report to your office any movement I may make in connection with the Nicobar expedition, I have the honor to state that, as His Excellency the Right Hon'ble the Governor General was not aware of the visit of Her Majesty's Ships *Wasp* and *Satellite* to these islands when Colonel Norman's letter was written, I propose remaining at Penang till further orders, as it has struck me as probable that this intelligence may cause some change in the plans of Government.

From COLONEL H. MAN, M. S. C., *to the Military Secretary to the Government of India,—dated Prince of Wales Island, the 23rd September* 1867.

I HAVE the honor to acknowledge the receipt of a copy of your letter to the Commodore Commanding East India Station, with its concluding memorandum No. 49 of the 17th August 1867, addressed to myself, conveying the offer of an appointment as Civil and Political Officer to an expedition which the Government of India proposes to despatch to the Nicobars, to punish those islanders for the outrages they have committed on the crews of numerous British vessels, and to prevent such atrocities in future.

2. At the time your letter was written, His Excellency the Right Hon'ble the Governor General had not received the report of the second visit of Her Majesty's Ships *Wasp* and *Satellite*, or it might have altered his determination of sending a fresh expedition. Should, however, His Excellency still entertain the idea, I can only say my services are quite at his disposal for that or any other duty on which he may think fit to employ me.

3. There is no doubt that it has been for years past the custom of these Nicobarians to make frequent prey of vessels touching at their shores; and the reason why these atrocities have not earlier come to our knowledge is, that they have invariably acted on the old maxim that dead men tell no tales, and butchered all who fell into their power, and, after plundering the vessel, scuttled her in deep water. The whole community being concerned in keeping the secret, and no traces left, it is no wonder that merely suspicion attached to the place, as of course many vessels were allowed to depart unharmed, and the profits they gained induced others to follow their steps.

4. The late visit of Her Majesty's Ship *Wasp* showed that English ships must, to a considerable extent, have fallen into their clutches, as many of their houses contained panelled doors and partitions, evidently taken out of good class ships, which had been most probably driven in there by stress of weather or disabled, and then captured.

5. I had a conversation with an old woman, who was found on the island by Captain Bedingfeld, and had given him much valuable information, and I think she mentioned 19 vessels as having been cut off to her

knowledge; and Captain Bedingfeld told me that one of the Nicobarians had actually the audacity to threaten the Nacodah of a vessel then lying at anchor, that they would dispose of him after the departure of the man-of-war.

6. With these facts before us, it cannot be doubted that it is the bounden duty of the Government having the command of these seas to take such steps as shall prevent the occurrence of such atrocities in future, and the simplest and most effectual mode of doing so is by taking possession of these islands.

7. His Excellency the Governor General desires to be informed in this case whether it would be more advantageous that the islands should be attached to India or the Straits Government.

8. I am clearly of opinion that India should have the charge, when it might be attached to the Andaman command, to which it would seem to be intended by nature as a dependency.

9. One great reason I would urge is, that the destination of all the trade frequenting the Nicobars is to Indian ports. Vessels leave the Straits to touch at these islands and load with cocoanuts, which they produce in immense quantities, and which are bartered at most advantageous rates for piece-goods and rum; and without some of the latter no bargain can be ratified. When they have completed their cargoes, they generally proceed to Burmah, where nuts always command very high prices; they never return direct to the Straits. Consequently, when a vessel quits these settlements for the Nicobars, she is lost sight of, and the first suspicion of her having got into trouble would arise at the port where she was expected, as she might touch at a dozen places before she comes back to us.

10. If I may judge from past experience, I do not see how the Straits can efficiently assume the proposed charge. The people of Penang, with a trade of between £4,000,000 and £5,000,000, have frequently complained of the way in which they have been left unvisited for months by a man-of-war. A late debate in the House of Commons clearly showed that the future policy of Government in these seas will be to limit the number of our gun-boats, of which the China fleet has till now been chiefly composed; and if, with the present large force, the Admiral is frequently distressed for vessels to cruise against the Chinese pirates and the Llanuns off the coast of Borneo, it is not likely that he will willingly undertake the protection of a petty trade in cocoanuts 4 or 500 miles beyond the extreme limits of his command, entailing, as it would of necessity, the removal of a vessel from a more important scene of action.

11. The Nicobars would, I think, form an important adjunct to the Andaman command, the Superintendent of which has, I am told, a gun-boat at his command, which could easily, with little interference with its special duties, and with benefit to the crew and vessel, pay

periodical visits to these islands, and return, if need be, in 48 hours to its station; or, if this could not be spared, a steam launch, such as is now supplied to Her Majesty's Navy, might be attached to the settlement, and quite serve in ordinary weather to keep up the communication.

12. I have no personal knowledge of the present condition of Port Blair, but it would appear very desirable to guard against the probable danger of an over-accumulation of convicts at that station. I believe they now amount to several thousands, and are receiving constant increase. It is difficult to conceive how a high standard of penal discipline can be enforced in such a body, containing as it does large numbers of ticket-of-leave men intimately associated with prisoners still under restraint though not in actual confinement.

13. The Nicobars, from their position, offer the most favorable site for the formation of an auxiliary settlement, and by the accounts of those who have recently visited these islands, they possess just the qualifications which would render them useful as a complement to the head-quarters station. Large grassy plains are here found well adapted for cattle, many of which, I hear, are now running wild; they are the descendants of the stock of the Missionaries who formerly resided here.

14. It has struck me that a colony of 1st class convicts and others, who have served their time, might be established at Trinkuttee or Nancowry with good effect, and be employed in collecting cocoanuts on Government or their own account, for the supply of shipping, and also in raising cattle, grain, vegetables, &c., for the use of Port Blair. I will not, however, attempt to enter into details, but merely throw out the above suggestion as indicating a mode by which these islands could be turned to profitable account.

15. The question of the healthiness of the site must not be overlooked when permanent residency is being discussed. The late expedition suffered but slightly from fever, though the men were constantly exposed to rough work in scouring the country during the heavy rains; but probably the Nicobars have their healthy and unhealthy season; at any rate the previous seasoning at the Andamans, under strictly analogous conditions, would seem to render the detachment of convicts from that settlement not a very dangerous experiment. I trust I have not been too prolix in the above statements.

From COLONEL H. MAN, M. S. C., *to* COLONEL H. W. NORMAN, C. B., *Military Secretary to the Government of India,—dated Prince of Wales Island, the 27th September* 1867.

IN notifying my acceptance of the appointment of Civil and Political Officer to the Nicobar expedition, I ask permission to state that, on being relieved of my office by Colonel Anson, who has been appointed by Her Majesty to be Lieutenant-Governor of Penang, I tendered my

services to Colonel Ord, the Governor of the Straits, to be employed in any way he might consider most conducive to the public interests, while I was waiting the orders of my own Government as to my future destination.

2. His Excellency the Governor was, I knew, anxious to send a mission to the Rajahs of Perak and Salengue to endeavour to effect a settlement of some long outstanding questions, and this was, indeed, the reason of my making the offer, as I was aware that with his new staff he would find considerable difficulty in making a suitable selection. His Excellency readily accepted my tender.

3. On my return from this mission I found Penang in a great commotion from a quarrel having sprung up between two of our largest Secret Societies. The riot lasted several days, and immense injury was inflicted on life and property.

4. Since the suppression of these riots, I have been employed as President of a Committee of Inquiry on their origin and cause, and the connection of the Secret Societies therewith; and I am happy to say that our labors are likely to be attended with much success, as we have gained a very complete knowledge of the organization, rules, and working of the Hooeys, or Secret Societies.

5. I have shortly to make another trip to the Native States to complete my present committee, and to undertake another, which will have to apportion compensation to the sufferers from the late *émeute*.

6. I mention these facts for the information of His Excellency the Governor General, that he may know that I have abundance of useful occupation on hand to keep me fully employed till the expedition is ready to start.

7. According to the best accounts, the most unhealthy time at the Nicobars is just at the termination of the S. W. monsoon, or about November, when the drying up process commences. Should His Excellency desire any further information in connection with these islands, I shall be happy to collect it.

From COMMODORE L. G. HEATH, *Commanding East India Station, to* HIS EXCELLENCY THE RIGHT HON'BLE SIR J. L. M. LAWRENCE, BART, G. C. B., G. C. S. I., *Viceroy and Governor General of India,—dated Bombay, the 30th September* 1867.

YOUR Excellency will receive from the Governor of the Straits Settlements a detailed account of the proceedings at the Nicobar Islands of Her Majesty's Ships *Wasp* and *Satellite*, assisted by a party of native troops from Penang.

Her Majesty's Ship *Wasp* had apparently left the Straits before the arrival of my letter to her Commander, communicating your Excellency's wishes, as expressed by Colonel Norman in his letter No. 47M, dated 17th August, and she has now arrived at Trincomalee, and will, in accordance with instructions from the Admiralty, return to England.

All that is practicable in the way of recovering the European prisoners has apparently been done, and a punishment sufficient, I hope, for the prevention of future piracies for a time, has been inflicted on the natives, and I presume your Excellency will therefore consider that the presence of a man-of-war at the Nicobars is no longer necessary, but that the mission of Colonel Man may safely be carried out under the protection of the Rangoon gun-boat. Should, however, your Excellency think otherwise, I would beg to suggest an application for assistance to the Senior Naval Officer in the Straits, who has been directed by the Lords Commissioners of the Admiralty to attend to any requisitions he may receive for assistance or otherwise respecting the Nicobars.

No. 113.

Copy of the above forwarded to Colonel H. Man for information, with reference to his letters of the 23rd and 27th September 1867, with the intimation that nothing more can well be done until the receipt of a reply from the Governor of the Straits Settlements to the letter from this Department, No. 966, dated 30th September 1867.

From the Government of India, to the Secretary of State for India—No. 19, dated 7th December 1867.

In continuation of our Military letter No. 253, dated 3rd September 1867, forwarding copies of papers relative to the murder of the crew of the *Futteh Islam* in the Nicobar group, we have the honor to forward, for your information, copies of further papers on the subject, and beg to be favored with your instructions whether, in the event of its being determined to hold the Nicobars, these Islands should be annexed to India, or the Straits Government.

Cons. September 1867, Nos. 1128 and 1129.
Proceedings for Sept. 1867, Nos. 851 to 857.
" " Nov. " " 36 to 39.

2. It will be perceived from the communication from the Colonial Secretary, Straits Settlements, No. 306, dated 25th October 1867, which forms one of the enclosures to this letter, that the measures

Cons. November 1867, No. 47.

that have already been taken in view to the punishment of the perpetrators of the outrages, render, in the opinion of His Excellency the Governor, further local action unnecessary.

From LIEUTENANT-COLONEL H. K. BURNE, *Offg. Secy. to the Govt. of India, Military Department, to the Commodore Commanding East India Station, Bombay,—No.* 799, *dated the* 25*th September* 1867.

I AM desired to forward copy of a communication* from the Foreign Department, and of its enclosures, regarding the fate of the Master and seven men of the *Assam Valley*, who are supposed to have been murdered by the aborigines of the Little Andaman Island, and to request that you will be good enough to take such measures as you may deem most expedient, in connection with the proposed expedition to the Nicobars, to deal with this case also, with the view of ascertaining whether there can be any survivors of the party from the *Assam Valley*, and of punishing the inhabitants of the Little Andaman for the supposed murder of some or all of the party.

* No. 862, dated 27th August 1867.

From the HON'BLE A. E. H. ANSON, *Lieutenant-Governor, Prince of Wales Island, to* SIR W. MUIR, K. C. S. I., *Secy. to the Govt. of India, Foreign Department,—No.* 238, *dated the* 22*nd August* 1867.

I AM directed by the Governor's order to acquaint you, for the information of His Excellency the Viceroy, that in consequence of the information furnished by Captain N. Bedingfeld, R. N., of Her Majesty's Steamer *Wasp*, of the result of a visit made by him to the Nicobar Islands in June last at Governor Ord's request, His Excellency decided in despatching an expedition to these islands, consisting of Captain Bedingfeld, of Her Majesty's Steamer *Wasp*, and Captain Edye, of Her Majesty's Steamer *Satellite*, with some sepoys, to endeavour to procure the release of some white persons who are believed to be held in captivity by the natives, to discover and punish the perpetrators of the murder of the crew of the Brig *Futteh Islam* last year, and of any other similar outrages which could be proved against them, and to take such steps as would impress upon the natives the certainty that punishment would follow any repetition of their crimes.

The expedition returned to Penang a few days since, having successfully achieved its object. Ample traces were discovered of the outrage on the *Futteh Islam* having been perpetrated at Great Nicobar; and the natives having fled from the village, and refused to hold any communication with the expedition, their houses and canoes were burnt, but their crops and the cocoanut trees which enable

them to carry on their trade, in compliance with the suggestion of the Governor General in Council, were spared.

At Nancowry and its vicinity, numerous articles taken from plundered vessels were found in the houses of the natives, which, as at Great Nicobar, were mostly abandoned. It was ascertained that an unhappy white lady, who, with her two children (girls), had been spared in the murder of the crew of a vessel seized by the natives some two years since, had been held in captivity, and exposed to the most brutal treatment, being passed from one to another of the headmen as their fancy dictated, till at length, being accidentally seen by a native Captain trading there, the natives became alarmed, and after an ineffectual attempt to poison her and her children, they were relieved from further suffering by being taken to the jungle and knocked on the head.

The houses of the men known to have been implicated in these outrages were burnt, and their canoes, some of them war-canoes, 70 feet long, were destroyed, and also their pigs and poultry, but their farms and cocoanut trees were spared.

One little girl, apparently a *kling*, or half-caste, was rescued, but a colored woman and some children are ascertained to be held in captivity by one Hang-chee-up, a native, who fled with them to the inaccessible island of Katchall.

The whole of this duty, which was rendered more trying by incessant rainy weather, was performed to the entire satisfaction of His Excellency, who instructs me to say that, in reporting these proceedings to Her Majesty's Secretary of State for the Colonies, he has suggested that the Nicobar Islands shall be taken possession of, and a small force established there, for the security of trading and passing vessels, or that a man-of-war shall be instructed to pay frequent visits to them.

From LIEUTENANT-COLONEL H. K. BURNE, *Offg. Secy. to the Govt. of India, Military Department, to the Commodore Commanding East India Station,—No.* 965, *dated the* 30*th September* 1867.

WITH reference to the letter addressed to you by Secretary Colonel Norman, No. 47M, dated Simla, 17th August 1867, I am directed to forward to you the accompanying copy of a letter from the Lieutenant-Governor of Prince of Wales Island, No. 238, dated 22nd August 1867, giving an account of the proceeding of the *Wasp*, which recently proceeded with a small native force to the Nicobar Islands to punish the perpetrators of the various outrages committed there.

2. The Governor of the Straits Settlement will be requested to state whether it is desirable that the measures, determined upon by the Government of India, for an expedition to the Nicobar Islands, should still be carried out.

From LIEUTENANT-COLONEL H. K. BURNE, *Offg. Secy. to the Govt. of India, Military Department, to the Colonial Secretary, Straits Settlements,—No.* 966, *dated the* 30*th September* 1867.

WITH reference to my letter No. 135, dated 5th September 1867, and to the Lieutenant-Governor's letter to the Foreign Department No. 238, dated 22nd August 1867, reporting the proceedings of the *Wasp*, which recently proceeded with a small native force to the Nicobar Islands, I am directed to request that His Excellency the Governor of the Straits Settlements may be moved to state, for the information of the Government of India, whether His Excellency would desire that the measures recently determined upon, to send a small expedition to those islands, with a view of rescuing the captives, if practicable, and of punishing the perpetrators of the various outrages committed there, should still be carried out.

2. Copies of communications* which have not already been sent with my letter of the 5th instant, are now forwarded for reference.

* Commodore's letter, dated 30th July 1867, with annexments.
Commodore's letters, dated 5th & 7th August 1867, with annexments.

3. The favor of an early reply is solicited.

Extract of a Despatch from the Government of India, Marine Department, to the Right Hon'ble the Secretary of State for India,—No. 2, *dated* 23*rd January* 1868.

PARA. 3. You will perceive also that we have issued a Notification cautioning all concerned against landing on any of the Andaman and Nicobar groups without taking due precautions against attack or surprise.

4. While on the subject of the Nicobar group, we beg to draw your attention to a communication from the Colonial Secretary, Straits Settlements, which will be found among the papers now forwarded, stating that the Naval Commander-in-Chief of Singapore has notified his intention at once to despatch Her Majesty's Steamer *Perseus*, and if necessary, a gun-boat, to visit the Nicobar Islands, and communicate with the chiefs, a measure which His Excellency the Governor considers judicious, and likely to be attended with good results.

From LIEUTENANT-COLONEL R. MACPHERSON, R. A., *Colonial Secretary, Straits Settlements, to the Secy. to the Govt. of India, Military Department,—No.*, 351, *dated the* 29*th November* 1867.

I HAVE the honor to acknowledge your minute No. 112, forwarding extract of a despatch from Commodore L. G. Heath, Commanding East India Station, to His Excellency Sir J. Lawrence, Bart., Her

Majesty's Viceroy and Governor General of India, bearing date the 20th September 1867, upon the subject of further proceedings against the natives of the Nicobar Islands.

I am instructed by His Excellency the Governor of the Straits Settlements to refer you in reply to letter from this office, No. 306 of date the 25th ultimo, which conveyed the expressions of His Excellency's opinion, that further local action was unnecessary.

At the same time I am directed to acquaint you, for the information of His Excellency the Governor General of India, that Sir H. Keppel, the Naval Commander-in-Chief of this Station (within which the Nicobar group has now been placed by Her Majesty's Government) has notified to this Government his intention to despatch at once Her Majesty's Steamer *Perseus*, and if necessary a gun-boat to visit the Nicobar Islands, and communicate with the chiefs, a measure which His Excellency considers judicious, and likely to be attended with good results.

The attention of Her Majesty's Government has been called to the expediency of keeping up a regular and constant communication with the Nicobar Islands, and also to the expediency of hoisting the British flag, and forming a small establishment upon them. As yet however no reply has been received to this despatch.

Extract from the Proceedings of the Government of India, in the Foreign Dept. (Political),—No. 356, *dated the* 15*th March* 1869.

READ again the undermentioned papers relative to the annexation of the Nicobar Islands:—
Political Proceedings A, February 1868, Nos. 238 to 241.
" " April " " 10 to 12.

Read Despatch from Right Hon'ble the Secretary of State, dated 20th January 1869, No. 6, intimating that the Danish Government have no objection to the proposed annexation of the Nicobar Islands, and directing the adoption of measures to bring the islands under the British flag, and to provide for their future administration under the Superintendent of the Andaman Islands.

Read also letter to Commodore Sir L. G. Heath, Commanding East India Station, dated 25th February 1869, No. O-A, requesting him to depute one of Her Majesty's vessels-of-war to take possession of the islands accordingly, and to occupy them continuously till they can be handed over to the Military or Civil Administration.

Read further reply from Commodore Sir L. G. Heath, dated 4th instant, intimating the issue of orders to Commander Morrell, of Her Majesty's Ship *Spiteful*, to proceed to the Harbour of Nancowry, and take and hold possession of the islands, and requesting that that Officer may be relieved at an early date.

ORDERED, that the foregoing papers be forwarded to the Home Department, with the request that early steps may be taken to organize

an administration for the Nicobar Islands under the supervision of the Superintendent of the Andaman Islands as directed by the Home Government.

Confidential.—From W. S. SETON-KARR, Esq., *Secy. to the Govt. of India, Foreign Department, to the Commodore of the East India Station,—No. A, dated the 25th February* 1869.

I AM directed by His Excellency the Viceroy and Governor General of India in Council to inform you that, under authority received from the Secretary of State, the Government of India has determined on taking immediate possession of the Nicobar Islands, it having been ascertained through the proper diplomatic channel that the Danish Government has no objection to offer to this course.

2. I am accordingly directed to request that you will take steps to depute one of Her Majesty's vessels to the islands in question, in order to effect this object.

3. The measure should be carried out as quietly as possible, and without any public intimation being given of the intention of Government, but it is most essential that the formalities should be observed which are proper to such occasions, that the British flag should be hoisted on the principal island or islands; and that a proclamation be read out to the effect that these territories are occupied by British Officers acting under authority, and that they will henceforth be regarded as part of the dominions of the Sovereign of Great Britain. A royal salute of 21 guns should be fired on the occasion of hoisting the flag on the main island.

4. It is also necessary, and in accordance with international law, that to render the occupation of these islands effective, it should be continuous; and the vessel which takes possession, must, therefore, remain at the Nicobars until such time as the islands can be regularly handed over to the Military or Civil Administration.

5. Measures will be taken to effect this without delay. It will be sufficient if the vessel, which you intend to despatch with the objects indicated, can be at the Nicobars within three weeks or a month from the date of your receiving this despatch.

Confidential—From COMMODORE SIR L. G. HEATH, K. C. B., *Comdg. East India Station, to* HIS EXCELLENCY EARL MAYO, K. P. G. C. S. I., *Viceroy and Governor General of India,—dated the 4th March* 1869.

IN accordance with your Excellency's request, conveyed in letter No. A, from Mr. Secretary Seton-Karr, I have ordered Commander Morrell, now commanding Her Majesty's Ship *Spiteful* at Trincomalee,

to proceed to the Harbour of Nancowry, and take and hold possession of the Nicobar Islands until relieved by proper authority.

I enclose for record a copy of the proclamation he will read, and I have ordered that a royal salute shall be fired upon hoisting the English flag.

I have thought it best that Commander Morrell should remain altogether at Nancowry until the arrival of the authorities deputed to succeed him, because, if the proclamation is valid as regards any one island other than that at which it is read, it is, I presume, equally valid over the whole group, and it would be unwise to leave the flag at Nancowry without full and efficient protection from possible insult. Moreover, it is unlikely that Commander Morrell will have been able to obtain an interpreter at Trincomalee, and the chances of misunderstandings with the natives would be increased by visiting more of the islands.

I am about soon to proceed to the southern parts of my station, and I have therefore instructed Commander Morrell to send duplicates of his letters of proceedings direct to your Excellency.

The *Spiteful* will probably reach Nancowry about the 22nd of March, and as she is under orders for England, I should be glad if the arrangements for relieving her could be made with all convenient haste, so that she may, if possible, save the N. E. monsoon.

PROCLAMATION.

I, ARTHUR MORRELL, a Commander in Her Britannic Majesty's Naval Service, and now commanding Her Majesty's Ship-of-war *Spiteful*, having received instructions thereto from Commodore Sir Leopold Heath, K. C. B., Commanding Her Majesty's Naval Forces in the Indian Seas, acting on the requisition of the Earl Mayo, Viceroy and Governor General of India, do now on this the————day of ————A. D. 1869, in the name and on behalf of Her Most Gracious Majesty Victoria, Queen of Great Britain and Ireland, take possession of this Island of Nancowry, together with all others commonly known as the Nicobar Islands, that is to say, the Island of Car-Nicobar, with those lying between them, including Tillanchong, and in token thereof, I now hoist the flag of Great Britain, proclaiming to all concerned the supremacy of Her Most Gracious Majesty, and calling upon the inhabitants of the said islands to submit themselves to Her Majesty's laws.

From the Secretary of State for India, to the Government of India,— No. 214, dated the 23rd December 1867.

AMONG the enclosures to your Excellency's letter in the Military Department, No. 253 (Separate) of the 3rd September 1867, respecting the measures taken to punish the natives of the Nicobar Islands for

their outrages on the crews of the ship-wrecked vessels, and to recover Europeans stated to be still in their hands, I find a letter from the Secretary to your Excellency's Government, No. 47 of the 17th August last, in which reference is made to an inquiry into the expediency of annexing to the Government of India the Islands in question as an alternative to their being annexed to the Government of the Straits Settlements.

2. Respecting the latter measure, Colonel Ord will doubtless have been placed in possession of the views of the Secretary of State for the Colonies, with whom I have communicated on the subject in a letter, copy of which is enclosed.

3. With reference to the annexation of these islands, either to the territories under your Excellency's Government, or to the Government of the Straits Settlements, I wish to be placed in full possession of your sentiments as early as practicable.

From the Assistant Military Secretary, to the Under Secretary of State, Colonial Office,—dated the 4th December 1867.

I AM directed by the Secretary of State for India in Council to transmit, herewith, for the information of the Secretary of State for the Colonies, copy of a Military despatch from the Government of India, No. 253, dated 3rd September 1867, reporting their proceedings consequent on the murder of the crew of the Brig *Futteh Islam* in the Nicobar group and of other similar outrages.

I am to request that you will draw His Grace the Duke of Buckingham's attention to the 2nd paragraph in the Government letter (No. 47, in the Marine Department,) dated the 17th August 1867, relative to a proposed annexation of the islands to the Indian or Straits Government.

From CAPTAIN H. LEWIS, *Master Attendant, Rangoon, to the Secretary to the Chief Commissioner of British Burmah,—No.* 1288*A*, *dated the 9th January* 1868.

SEEING an article in the papers a short time ago relative to the Nicobar Islands, my attention was called to the fact that, since this group of islands had been formally ceded to the British Government by the King of Denmark, no steps have been taken to assure ourselves of the possession of them.

I am not sufficiently versed in the law of nations to know if it be essentially necessary to a title of possession that the nation claiming this title should have hoisted its flag on one or more of the principal islands of the group, at the same time proclaiming her title of possession.

Such, however, was the course pursued by the Danish Government when I was in command of their surveying expedition, and I have thought it advisable to call the attention of the Chief Commissioner of

British Burmah to this subject, so that, should he deem it necessary, he may remind the Governor General of India that as yet the British flag has not been hoisted, nor formal possession taken of the Nicobar Islands.

From the Government of India, to the Secretary of State for India,—No. 27, dated the 13th February 1868.

WE have duly considered the question put in paragraph 3 of your letter No. 214 of the 23rd December last, as to the expediency of annexing to the Government of India the Nicobar Islands as an alternative to their being annexed to the Government of the Straits Settlements.

2. Looking to the geographical situation of those islands, we observe that they are distant about 300 miles from our station in the Andamans*, and some 450 miles from the nearest of the Straits Settlements, Penang, and from the other Straits Settlements, Singapore and others, they are of course much more distant. They are also distant about 370 miles from the Tenasserim Coast (of British Burmah). From this point of view, then, they are more conveniently situated, as regards the Indian Settlement in the Andamans and the southern parts of British Burmah than as regards the Straits Settlements.

* The distances are calculated from the centre of the Nicobar group.

3. We consider that the Nicobars might be managed from the Andaman station, that is, they might be under the control of the Superintendent of the Andamans, who is much nearer than any other authority could be.

4. Having regard to the serious cases of piracy and other outrages which have of late occurred, we conclude that the Government of India would have better means for effectually suppressing such occurrences, or for dealing adequately with such affairs, than the Government of the Straits Settlements could reasonably be expected to possess. If a small military force were needed, the Indian army could certainly furnish it; if a small expenditure were needed, the revenues of India, which benefits by the increased security to trade and navigation, could afford that much. Perhaps, it would not be quite convenient to the Government of the Straits Settlements to do either.

5. For these reasons, though we should not otherwise be at all desirous of undertaking this charge, we incline to the view that the best arrangement would be to make over the Nicobar Islands to the Government of India. From the documents marginally noted, we find that there is no political difficulty, and no objection to the British flag being hoisted in those islands.

From the Secretary, Chief Commissioner, British Burmah, No. 6, dated 25th January 1868, (copy enclosed).

6. We have referred to the information regarding the Nicobars to be found in Selections from the Records of the Government of India, No. XXV. The islands appear to be nine in number, in a wild and uncleared condition. The inhabitants are supposed to be less than five thousand in number. If they were made over to this Government, we should be disposed to place them under the supervision of the Superintendent at Port Blair (Andamans), and in subordination to him, there might be stationed an European Officer at some selected station in the Nicobars themselves. They would be, together with the Andamans, under the general control of the Chief Commissioner of British Burmah. The exact nature of the military and naval arrangements that may be deemed requisite will be more properly determined when we have been put in possession of the views entertained by Her Majesty's Government on the subject of the present reference.

From the Secretary of State for India, to the Government of India,—No. 17, *dated the 8th February* 1868.

With reference to my despatch of the 23rd December 1867, No. 214, in the Political Department, in which your Excellency was requested to communicate to Her Majesty's Government your views as to the proposed annexation of the Nicobar Islands to the Government of the Straits Settlements, or to the territories under your jurisdiction, I transmit, for your Excellency's information, copy of a letter* recently received from the Colonial Office, from which you will learn that His Grace the Secretary of State for the Colonies is not prepared to assent to the annexation of the islands in question to the Government of the Straits Settlements.

* Dated 13th January 1868.

2. I take this opportunity of acknowledging the receipt of your Marine letter No. 19 of the 7th December 1867, which will, if necessary, be taken into further consideration, with other papers relative to the Nicobar Islands, on receipt of your reply to the reference made in my despatch above alluded to.

From Sir Frederic Rogers, *Bart., to the Under-Secretary of State for India,—dated the* 13*th January* 1868.

I am directed by the Duke of Buckingham and Chandos to acknowledge the receipt of your letter of the 4th ultimo, forwarding a copy of a despatch from the Government of India and other documents having reference to outrages committed by the inhabitants of the Nicobar Islands, and calling attention to a suggestion for the annexation of these islands to the Indian or Straits Government.

I am to state, in reply, that the Duke of Buckingham is not prepared to assent to any such arrangements so far as the Government of the Straits is concerned.

In His Grace's opinion the best way to keep these people in order and prevent piracy, would be frequent visits by vessels-of-war, and full measure of punishment for any crimes committed. And this, it

appears to His Grace, can be much better done while these people are not British subjects than if the islands were annexed to any British territory, and the people thus endowed with privileges of British subjects.

I am to add that the Lords Commissioners of the Admiralty have informed His Grace, as probably they have also the Secretary of State for India, that, in a letter dated the 15th November last, Vice-Admiral Sir Henry Keppell reports having detached the *Perseus* and *Grasshopper* to join the expedition despatched by the Governor General of India to punish the natives of the Nicobar and Andaman Islands, and compel them by blockade to surrender the perpetrators of recent murders of crews of trading vessels.

I am also to enclose, for Sir Stafford Northcote's information, a copy of the despatch received from Sir Harry St. George Ord, reporting the result of the expedition which had been undertaken against the Nicobar Islands.

From the Government of India, to the Secretary of State for India,—No. 46, *dated the* 3*rd April* 1868.

We have the honor to acknowledge the receipt of your despatch No. 17, dated 8th February last, transmitting for our information copy of a letter from Her Majesty's Secretary of State for the Colonies, in which His Grace the Duke of Buckingham and Chandos expresses an opinion adverse not only to the annexation of the Nicobar Islands to the Government of the Straits Settlements but to annexation at all.

2. This opinion has induced us to give further consideration to the subject. But, after due deliberation, we are unable to come to any other conclusion than that the time has come for taking these islands under the control of the British power. For the last 50 years the inhabitants have taken advantage of their isolated and independent position to plunder and murder the crews of vessels which have been wrecked on their coasts, or have made their harbours in distress. Punishment for these atrocities is difficult; preventive measures are ineffectual. For such measures vessels-of-war are not readily available. Nor, even if they were available, could much success be hoped from such occasional and fleeting visits as they would be able to pay.

3. The only plan, therefore, that suggests itself to us for preventing the recurrence of the outrages which have long attracted attention, is to occupy, with a proper degree of permanency, one of the islands, and from that vantage-ground to endeavour to reform and civilize the inhabitants. This is a work which we should not desire to undertake, except for its pressing necessity, and with the prospect of some measure of success.

4. Another consideration which we have not overlooked is the possibility of the occupation of the islands by a foreign power. It is

needless to dwell on the inconvenience which would be felt from the existence of a Foreign Naval Station in the immediate neighbourhood of our settlements in the Indian seas.

From His Grace the Duke of Argyll, K. T., *Secretary of State for India, to the Government of India,—No. 6, dated the 20th January* 1869.

With reference to former correspondence* on the subject of the proposed annexation of the Nicobar Islands, I forward, for your Excellency's information, copy of a letter† from the Foreign Office, enclosing communications from Her Majesty's Minister at Copenhagen, from which it will be seen that the Danish Government have no objection to the course proposed, but that, for reasons stated, they do not consider it desirable to make a formal cession of the islands.

* India, Foreign letters, 13th February, No. 27, 1868. India, Foreign letters, 3rd April, No. 46, 1868.

† Dated, 8th December 1868.

2. As it is clear from this correspondence that no difficulty will be raised by the Danish Government, your Excellency is authorized to take such steps as you may think fit to bring the islands under the British flag, and to provide for their future administration under the supervision of the Superintendent of the Andaman Islands.

3. You will report, from time to time, to Her Majesty's Government, the steps which you have taken in this matter

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From E. C. Egerton, Esq., *Under Secretary, Foreign Office, London, to* Herman Merivale, Esq., *Under Secretary of State for India,—dated the 8th December* 1868.

With reference to your letter of the 4th instant, I am directed by Lord Stanley to transmit to you, to be laid before Sir Stafford Northcote, copies of two despatches* from Her Majesty's Minister at Copenhagen, respecting the contemplated occupation of the Nicobar Islands by the Government of India. Sir Stafford Northcote will see from these despatches that, though the Danish Minister for Foreign Affairs does not consider it advisable to make a formal cession of the islands, in consequence of the difficulty which might be experienced in passing such a measure through the Rigs-dag, he has formally stated in a note to Her Majesty's Minister that he considers the islands, since their abandonment by Denmark, to be "derelict"; and in case the Government of India should not be satisfied with this, he states further that his Government voluntarily cedes its rights over them to that of Her Britannic Majesty, on the understanding that no other power shall have already taken possession of them.

* Nos. 38 and 39.

Lord Stanley does not doubt that Sir Stafford Northcote will agree with him that it is clear that no difficulty will be raised by the Danish Government to the annexation of the islands whenever it may seem fit to the Government of India to take that step.

RESOLUTION by the Government of India, Home Department, No. 1571-75, dated the 24th March 1869.

Read endorsement from Foreign Department, No. 356, dated 15th March 1869, forwarding papers relative to the occupation of the Nicobar Islands in the name of Her Majesty's Indian Government.

Read a Note on the subject by Colonel Man, Officiating Superintendent, Port Blair, dated 12th idem.

Read a Note of Conversations with Colonel Man, who had been summoned to Calcutta personally to confer with Government.

RESOLUTION.—The Secretary of State having sanctioned the formal occupation of the whole of the Nicobar group, and measures to this end having already been taken under orders issued in the Foreign Department, it remains to arrange for the administration of the islands under the supervision of the Superintendent of Port Blair.

2. The scheme proposed by Colonel Man is generally approved by the Governor General in Council. The three northern islands of the main group, *viz.*, Nancowry, Carmorta and Trinkuttee, on which the acts of piracy have chiefly occurred, will, for the present at any rate, alone be actually occupied, a nominal protectorate being extended to the other islands, to which also occasional visits would be paid. The occupying force should consist of one company of Native Infantry, with its European Officers, and they should be accompanied by a body of about 200 convicts, carefully chosen, in charge of one of the extra assistants to the superintendent. To them should be attached two European overseers, an apothecary, and a native hospital assistant. The workmen required for the speedy erection of buildings should also be taken with the party.

3. The necessary materials for wooden buildings should be taken from Port Blair, and, to facilitate this, the Public Works Department will be asked to arrange, if possible, for Colonel Man taking with him from Calcutta in the *Kwantung* a sufficient quantity of angle-iron for the barracks which will be required. As to the site and nature of the buildings to be erected, and the best method of defence, much will be left to the discretion of the Officiating Superintendent, subject to a report, which should be submitted to the Public Works Department, and to an ultimate adjustment of accounts in that department.

4. Colonel Man's proposal to make over to the expedition the paddle-box boats of the *Arracan*, which are said not to be required by that vessel, will be referred to the Marine Department for further consideration, and with a request that Colonel Man's wishes may be complied with, unless there be some very strong objection, of which this department has no knowledge.

5. To that department will also be referred the suggestions that the Steamer *Rainbow* should be obtained from the Straits Settlements by purchase, if necessary, and employed in keeping up communication between Port Blair and the Nicobars. A steam launch, such

as those employed by the naval authorities at Spithead, and which are understood to be both economical and good sea-boats, would be very useful at the Nicobars in exploring the coasts and keeping up communication between the islands. The Marine Department will be requested to make the necessary arrangements for supplying such a launch with the least possible delay. A cattle-boat is also very much to be desired to facilitate the proposed establishment of a cattle farm on the Nicobars. This can be obtained by Colonel Man himself at a small cost, and he is authorized to make the necessary arrangements for the purpose.

6. Colonel Man, who will be in charge of the expedition of occupation, should keep Government in possession of the earliest possible intelligence of all his proceedings.

From E. C. BAYLEY, Esq., *Secretary to the Government of India, to Commander* A. MORRELL, *Commanding Her Majesty's Ship-of-war* Spiteful,—*No.* 1577, *dated the 24th March* 1869.

I AM directed to forward to you the accompanying amended proclamation to be used in substitution of the one you received from Commodore Sir Leopold Heath, K. C. B., Commanding Her Majesty's Naval Forces in the Indian seas.

2. You will have perceived that the effect of the latter document would be to place the Nicobars entirely under the control of Her Majesty the Queen, and subject them to the legislative action of the British Parliament alone. The possession of the islands in question was, however, determined upon with the express intention of attaching them to Her Majesty's dominions in India, and bringing them under the jurisdiction of the Indian Government. For these reasons His Excellency the Governor General in Council considers it necessary to adopt the revised proclamation herein enclosed.

3. If the proclamation received by you from Commodore Sir Leopold Heath has been made before this letter reaches you, His Excellency the Governor General in Council desires that the revised proclamation may be also made, and that the forms may be again gone through which were adopted on the former occasion.

I, ARTHUR MORRELL, a Commander in Her Britannic Majesty's Naval Service, and now Commanding Her Majesty's Ship-of-war *Spiteful*, having received instructions thereto from Commodore Sir Leopold Heath, K. C. B., Commanding Her Majesty's Naval Forces in the Indian seas, acting on the requisition of the Earl of Mayo, Viceroy and Governor General of India, do now on this the——day of————in the name and on behalf of the Indian Government of Her Majesty the Queen of Great Britain and Ireland take possession of this Island of Nancowry, together with all others commonly known as the Nicobar Islands, that is to say, the Island of Car-Nicobar and Great Nicobar with those lying between them including Tillanchong, and in token

thereof I now hoist the flag of Great Britain, proclaiming to all concerned the supremacy of Her Most Gracious Majesty, declaring the said islands to be subject to Her Majesty's Indian Government, and calling upon the inhabitants of the said islands to submit themselves to Her Majesty's laws as administered by the Government of India.

From E. C. BAYLEY, Esq., *Secretary to the Government of India, to* COLONEL H. MAN, *Officiating Superintendent of Port Blair,—No.* 1576, *dated the* 24*th March* 1869.

I AM directed to forward, for your information and guidance, the accompanying copy of a resolution recorded in this Department, on the subject of the occupation of the Nicobar Islands in the name of Her Majesty's Indian Government, and to request that you will proceed to the Nicobars as soon as possible, to relieve Captain Morrell, and enter upon the administration of the islands.

From COMMANDER A. MORRELL, R. N., *Commanding Her Majesty's Ship-of-war* Spiteful, *to the Secretary to the Government of India, Home Department,—dated the* 16*th April* 1869.

I BEG to acknowledge the receipt of your despatch No. 1577 of the 24th March, forwarding, the amended proclamation relative to the taking possession of the Nicobar Islands, and in reply thereto have the honor to state, for the information of His Excellency the Governor General, that, in accordance with his desire, the same has this day been made, the usual forms again gone through, and that I have given over possession to Colonel Man.

I arrived here in Her Majesty's ship under my command on the 24th, and first took possession of these islands on the 27th ultimo, since which time we have been clearing jungle and preparing in various ways for the reception of the colonists. A detailed report of my proceedings during this period I purpose forwarding to His Excellency from Trincomalee, for which port I leave to-morrow, my services being no longer required by Colonel Man.

From COMMANDER A. MORRELL, R. N., *Commanding Her Majesty's Ship-of-war* Spiteful, *to His Excellency* EARL MAYO, K. P. G. C. S. I., *Viceroy and Governor General of India,—dated the* 24*th April* 1869.

I HAVE the honor to transmit, for your Lordship's information, the copy of a report addressed by me this day to Commodore Sir L. G. Heath, K. C. B., Commanding-in-Chief, relative to my proceedings whilst employed at Nancowry, Nicobar Islands.

From COMMANDER A. MORRELL, R. N., *Comdg. H. M.'s Ship-of-war* Spiteful, to COMMODORE SIR L. G. HEATH, K. C. B. *Comdg. H. M.'s Naval Forces in the Indian Seas,—dated the 24th April* 1869.

I HAVE the honor to report that, in accordance with your orders, dated the 4th March last, received by me at Trincomalee on the 17th, I left that port on the 18th for Nancowry, Nicobar Islands, where I arrived on the 24th ultimo, having been obliged to steam nearly the whole distance on account of the light head winds and calms experienced.

On arrival I found a Chinese junk at anchor, and also observed three others off Trinkuttee.

Soon after anchoring in Spiteful Bay, a small canoe came alongside with cocoanuts, yams, and one fowl as a present; and the canoe-man, who was a Burmese, informed me that the natives were afraid, and had all gone away on seeing the war-ship. Another canoe soon after came alongside from the Chinese junk, and told the same story; also stating that there was fever among the natives, and that all the Chinese on board the junk had it.

I landed on the north point of Nancowry, and at the nearest village found only one inhabitant, he having been unable to do as the other villagers had done, cross over quickly to the other islands, which they were observed to do on our making our appearance. Through the interpreter, I begged this man to tell the people to return to their homes, as I wanted to see them all and to be their friend. I then visited another village which was quite deserted.

After leaving these villages I boarded the junk, saw the master, examined the vessel's papers, and found her from Penang loading with cocoanuts, her clearance being up on the 30th April. There were several sick on board, and on my informing them that the Surgeon of the *Spiteful* would see to them, they were very thankful.

I then pulled across to another village on Carmorta Island, but found that the natives had retreated into the jungle on our approach; but several Malays, Burmese and Chinese were seen here, they being part of the junk's crew who were employed in collecting and drying cocoanuts. I told these men the object of my visit, and that I wanted the natives to return to their villages; also that I was desirous to see them on the 27th, the day on which I hoped to be able to get the flag staff up. Before I left this place two or three natives or jungle-men came down, but no one seemed able to converse with them, although the Malays and Chinese after a long time and a great many signs made them understand what I was about to do, but the information did not seem to interest them at all.

I then again went across to Nancowry to select a site for the flag staff, and after visiting various parts, determined that the best spot was the extreme northern point (which I have named Mayo Point), it being tolerably high, visible from seaward, and commanding the entrance of the harbour at its narrowest part.

On returning on board, I made arrangements for clearing the jungle from Mayo Point, and erecting the flag staff; and, taking the great heat into consideration, I determined upon only working on shore between 5 and half-past 7 A. M., and 4 and half-past 6 P. M., and this routine was daily carried out during my stay there.

On the 27th, at 8 A. M., I, with a party of officers, seamen and mariners, landed and hoisted the British flag in the presence of about 50 natives; made the proclamation forwarded by you, also its translation in Malay, which was read by the interpreter, and took possession of all the Nicobar Islands on behalf of Her Majesty, at the same time dressing ship and firing a royal salute.

Between the 24th March and the 15th instant, the whole of the top of Mayo Point was cleared from jungle and levelled; a good flight of steps made from the top to the bottom; the flag staff erected; the level land at the foot of the Point freed from jungle as much as possible; an old well, which we found 7 feet deep and quite dry, deepened to 20 feet with a diameter of 7 feet 6 inches, through solid rock, and the upper part of it bricked up; a second well sunk 14 feet, diameter 7 feet, on Carmorta Island, and the entrance to Nancowry Harbour buoyed.

Being directed by you to do all in my power to conciliate the natives, I deemed the best means of gaining their confidence would be to distribute small presents amongst them, for which purpose I obtained from the Paymaster of this ship, and on the occasion of taking possession of the Islands distributed two pounds sterling in small coins, 100lbs. of rice and 100lbs. biscuit.

On the 15th instant, at noon, the Bengal Marine Steamer *Arracan*, with the hulk *Blenheim* in tow, arrived with Colonel Man on board, he having been entrusted by His Excellency the Governor General with the management of the Nicobars.

I received from him an amended proclamation which the Governor General desired me to make, the latter one placing the Islands under the control of the Indian instead of the Imperial Government, as was the case with the first.

This was made, and the customary ceremonies again gone through on the 16th; and my services being no longer required by Colonel Man, I left on the following day, 17th, for this place, where I have to report my arrival this day.

In concluding, I would observe that the officers and ships' company of Her Majesty's ship under my command deserve great praise for the very willing manner in which this work was performed under trying circumstances, the jungle in places being almost impenetrable, and the men but imperfectly supplied with tools. And I may remark that Colonel Man, on my handing over possession to him, tendered me his warmest thanks for the very efficient manner in which we had prepared

for the reception of the colonists. Further, I have much pleasure in adding that, though fever was prevalent in most of the villages adjacent to Cross Harbour, as also on board the junks lying at Nancowry and Trinkuttee, none of the crew of this ship were in the least affected.

I enclose the despatch received from E. C. Bayley, Esq., Secretary to the Government of India, relative to the Nicobars being taken possession of on behalf of the Indian Government; also a copy of my reply thereto, together with a rough chart of Nancowry harbour, showing the names I have given to the various places, which I hope will meet with your approval.

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on 08 January, 2019